ASSESSMENT AND PRESERVATION PLAN FOR GLENWOOD CEMETERY, THOMASTON, GEORGIA

CHICORA RESEARCH CONTRIBUTION 328

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ABSTRACT

The Glenwood Cemetery in downtown Thomaston, Georgia has operated since ca. 1830 and was acquired by the City of Thomaston in 1901. Throughout its history the cemetery has suffered what might be called benign neglect. Today the cemetery exhibits an overall worn appearance, receiving very minimal maintenance. While damage is not severe or widespread, the conditions within the cemetery are deteriorating. Combined with inappropriate care and maintenance activities, it is likely that the condition of the cemetery will decline rapidly over the next decade without informed intervention.

While the cemetery is under a landscaping contract, the work performed does not appear to meet the agreed upon scope of work. We have been presented with no evidence that the Superintendent of Streets, responsible for the oversight of this agreement, has made any effort to improve maintenance activities. There are, however, other indications of the City's lack of care. Recently conducted street paving in the cemetery is deficient and already deteriorating. Gates have not been maintained or even appropriately locked. There is an absence of police patrols. And while the cemetery is owned by the City, this entity was unwilling to contribute any support to the volunteer group which sought — and entirely funded — this study.

The City of Thomaston is providing very poor care and maintenance, defending its inaction claiming that the City has no authority to provide better care. This is truly a preposterous defense and exhibits a callous disinterest in the cemetery's care and preservation. It is critical that the citizens of Thomaston make clear that Glenwood, as a part of the City's heritage, deserves better care.

Careful review of this study will outline areas which offer opportunities for relatively easy improvement, as well as other actions which will require capital expenditures. Preservation, as any owner of an old house or antiques will be quick to point out, costs money — and cemetery preservation is no different. The appropriate care of Glenwood will cost more than is currently being devoted; while some actions can be accomplished by volunteers, a significantly greater budget is necessary to ensure the long-term care and preservation of this unique resource.

It is important that the City and volunteers strictly adhere to common preservation/conservation procedures in order to maintain and protect the cemetery's historic integrity and the well being of the monuments. This report briefly outlines and explains the most important issues, including the need to document the nature of all treatments and changes, the need to use the minimum amount of intervention that will ensure the protection of the stone or brickwork, and the need to respect the original fabric. In addition, we focus on two fundamental questions in attempting to develop treatment priorities. First, is the object a threat to others? Examples of this are loose monuments or tilted monuments which might fall and injure visitors. Second, is the object a threat to itself? In other words, is the object in immediate danger of further deterioration? Examples of these include stones that are actively deteriorating and for which delay in treatment may result in unrecoverable loss. Once these two priorities are met, other treatments that involve long-term preservation or which deal primarily with aesthetics may be considered. Obviously, there are some actions which require little financial planning or budgeting and these may be acted on immediately.

In terms of **landscape issues** there are many which can be immediately implemented by the City or which require only limited funding.

- Circulation within the cemetery is poor — the roads are narrow, one is a dead end, and there is a near absence of parking. We recommend that the South Bethel Street gate be closed for normal, daily operations.

Likewise, the two most eastern gates on Mallory should be closed. This would leave open, on a routine daily basis, the main entrance off South Hightower and the western most gate on Mallory. This practice would dramatically reduce through-traffic and provide greater security for the cemetery and its plots. Only during funerals should all gates be opened. All of these roads should be identified as one-way. The north-south roads with closed gates should be identified as having no outlets.

- Given the narrow roads and evidence of abundant and frequent damage to stones and coping, we recommend that construction trailers or any equipment larger than a full-sized automobile be prohibited from entry into the cemetery. Such vehicles should off-load equipment and/or materials for transport by smaller equipment into the cemetery. While some may complain of higher labor costs, this is preferable to the extent and nature of damage which is apparent in the cemetery.

- We also recommend that bollards be installed at all corners and adjacent to fences in order to protect plots from additional vehicular damage.

- As the current road surfaces deteriorate (which may be sooner than anticipated), we recommend that some alternative paving material be selected. Appropriate choices might include concrete or brick pavers. The City may even wish to explore the use of concrete grass pavers to help soften the harsh appearance of the roadways.

- The City should consult with a civil engineer to determine the cause of the seemingly rapid deterioration of the recently repaved roads and the steps necessary to either restore the current roads or replace them with some more durable material.

- Pedestrian pathways are infrequent and any attempt to improve this is likely to cause significant deterioration in the appearance of the cemetery. This is one reason that the City should explore greater pedestrian use of the cemetery, even during burial services. Better care, however, should be taken of those which are present. Signage should be erected to remind pedestrians to be respectful of graves.

- Trash receptacles should be erected at strategic locations throughout the cemetery. Minimally they should be placed at the two entrance/exit points, as well as at major interior points.

- It is critical that all entrance/exit points be locked at night. In addition, the police should establish a far more aggressive patrol policy, checking the cemetery during both the daylight hours and also when the gates are locked.

- Additional pole mounted security lighting should be provided along South Hightower where the fence is low and access into the old cemetery section is easiest.

- The City should make plans to reseed at least portions of the cemetery to establish a suitable turf grass, rather than the current range of weeds. While initially expensive, this would have a significant long-range benefit of reducing the maintenance necessary to keep the grass presentable during the growing

season.

- Consideration should be given to using ground covers under trees providing dense shade. This would dramatically improve the landscape while resulting in very minimal increase in maintenance activities.

- Special care must be exercised to prevent damage to plantings original to the cemetery. Identified plantings include nandina, yucca, elaeagnus, and iris. The wishes of the original families should be respected and these plantings should not be removed.

- The cemetery's appearance could be dramatically improved by adding to these plantings using appropriate historic materials, such as daylilies, coneflower, coreopsis, lantana, butterfly bush, verbena, and angel's trumpet.

- There is currently no tree policy and trees have been improperly — and imprudently — removed. All trees should be preserved unless they present a clear and documented danger to the public or monuments. When removals are necessary a professional firm, exercising extreme caution, should be retained. The City should also plant a new, appropriate species, for each tree removed.

In terms of **maintenance issues**, much could be accomplished by simply ensuring compliance with the provisions of the current landscape agreement. The City, however, should understand that it will be impossible to achieve the appropriate level of care for the price it has received in the past. Consequently, many of these recommendations should be incorporated into future scopes of work (additional scope of work issues are discussed in the body of this study).

- Most fundamentally, it is critical that the City demand that cemetery workers have some minimal training in horticultural activities, as well as an understanding of the sensitive nature of the cemetery setting and appropriate behavior in the cemetery. Anyone responsible for pruning, for example, should have knowledge of appropriate practices and methods.

- No riding mowers or large commercial power mowers should be used at Glenwood. Only small power mowers should be used and these should never be allowed to come closer than 18 to 24 inches of the markers or copings. All mowers used in the cemetery should be padded to prevent accidental damage to stones.

- During the active growing season (ca. May 1 through June 15) the grass should be cut once a week. From mid-June through mid-August the grass should be cut at least twice a month. From mid-August through the end of the growing season the grass should again be cut weekly.

- While nylon string trimmers are a fact of life and may be appropriate for trimming the grass adjacent to stones, the City should insist that no string heavier than 0.08-inch be used.

- Chemical use in the cemetery should be strictly limited to the contractor responsible for the landscape and should be carefully documented. The choice of appropriate chemicals, in particular, should follow very clearly defined practices (outlined in this study).

- Herbicides for control of brush should be painted on the cut stump, not sprayed. Herbicides for control of grass in lots should be used only after

the weeds have been manually removed. The herbicide should be applied as a drench, not a spray.

- Much of the lawn area requires fertilization using 10-10-10 applied at the rate of 5 lbs. per 1,000 square feet. This should be done in a manner that allows none to remain on stones or copings.

- Fire ants are not controlled at Glenwood and this presents a significant liability to the City. We recommend that Amdro™ be used on identifiable mounds between April 15 and October 15, with a six-month follow-up treatment of a dursban drench. Once a mound is eradicated, the built-up soil should be removed and the sod releveled.

- Pruning is poorly and irregularly performed. The contractor should be required to present proof of employee training in proper pruning methods. The City should also inspect the contractor's work to ensure that appropriate practices and techniques are being used consistently.

- Trash should be removed from the cemetery on a weekly basis. This was not done during our assessment.

- There is a large pile of debris in the southwest corner of the cemetery. Present for at least several months at the time of our study, these materials must be removed immediately.

- The City or its contractor should also take steps to gain control of the seriously overgrown fence lines.

In terms of treatments we have provided a stone-by-stone assessment for the historic area, as well as a plot-by-plot assessment for the more modern areas of the cemetery. These have documented the need for much work. Some, as briefly outlined below, can use volunteer labor. Other treatments will require the attention of a conservator trained in the appropriate repair techniques. There is evidence of much bad work in the cemetery — this threatens not only the historic character of the cemetery, but also the safety of visitors.

- We have identified 215 stones that require resetting. Most represent monuments with one or more sections loose. With appropriate training, volunteers can repair these problems using a suitable mortar mix. Other stones included in this category are seriously tilted and require excavation and resetting in an upright position. Again, with minimal training volunteers should be able to conduct this work. There are also a number of deteriorated cradle graves which have sunken below grade and require excavation, the creation of a new foundation, and in some cases repair. Some, although not all, of these may be dealt with by trained volunteers.

- There are 82 stones which require mechanical repair. Many are in very poor condition and the need for intervention is immediate. Appropriate repair is complex and requires a trained conservator. Volunteers should not attempt this work; nor should the City allow family members to attempt self-repairs since the work often damages the stone and creates an unsafe repair.

- We identified 60 copings in dire need of repair or, in some cases, replacement. Many of the old concrete copings were laid using a mix containing large quantities of clinkers. Because of the sulfate in the clinkers, the damage to these copings is so serious that repair is not possible. They need to be removed

and replaced with similar cast coping. This work can most cost-effectively be accomplished by a firm specializing in concrete forming and finishing, under the supervision of a conservator. Other copings, however, have simply been displaced or damaged. Many of these can be repaired by volunteers, again with appropriate training and supervision.

- We identified 258 plots which are in immediate need of weeding and vegetation control, as well as 75 fire ant mounds. Both of these issues have been briefly discussed under maintenance issues.

- Glenwood is especially fortunate to have such a large and diverse assemblage of ironwork fences. These have not been ravished by thieves, looting gates for sale. Every possible effort should be taken to ensure their continued security. We recommend use of vinyl coated galvanized or stainless steel cable be used to secure the gates to their hinge posts. While not preventing the determined thief, this will at least slow the individual down, perhaps making them look elsewhere for easier targets.

- The fences require multiple repairs, including reattaching loose sections, excavation to remove bases from accumulated soil, and rehanging various gates. A wire bedstead requires immediate attention, including efforts to straighten and, if necessary, reinforce using stainless steel supports.

- All of the fences require appropriate preparation and painting. Details concerning this preparation, the appropriate primer(s), and top coats are provided in the full report. The caregivers may wish to explore using rust convertors as base coats, as well as volatile corrosion inhibitors as top coats. Detailed records should be maintained for each fence so it will be possible to evaluate a broad range of products and select those which perform the best.

- The one zinc monument at Glenwood exhibits evidence of cracking and deterioration cause by "creep" of the metal. Repair will be costly and may be delayed for 5 to 10 years to allow the funds to be collected. Postponing treatment longer will result in irreparable damage to this unique monument.

Our study reveals that the current ordinance is unclear and offers little protection to the cemetery. We provide a variety of very detailed recommendations concerning ordinances to protect the cemetery which should be immediately enacted by the City.

- The City should clearly document the limited burial rights held by plot "owners," reserving fee simple ownership rights to itself.

- The hours that the cemetery is open (i.e., gates unlocked) should be specified. We recommend 8:00 a.m. to 6:00 p.m. as appropriate.

- The City should limit the use of artificial flowers and make provision for the removal of all floral decorations. The ordinance should also specify that flowers and other items must be placed where they will not interfere with mowing or other maintenance activities.

- All grave openings and closings should be performed by hand and mechanical equipment such as backhoes should be prohibited from the cemetery.

- The City should enact a clear ordinance outlining appropriate behavior in the cemetery. Items of special importance include the behavior and control of children; handling and care of monuments, with a specific prohibition against any rubbings or other actions which might endanger the monuments; prohibition of any repairs without City approval; specific legal protection of markers, fences, and planted materials; prohibition against loud, abusive or vulgar behavior, including solicitation; and prohibition of animals in the cemetery.

- An ordinance should also include traffic issues, including safe speed, the right-of-way of pedestrians, and similar issues discussed in the main body of the report.

- We recommend the placement of regulatory signage at all of the various open gates.

- We also recommend that interpretative signage be developed, perhaps with the assistance of the City Archives. This signage should be inclusive and explore broad issues, not simply focus on the rich and famous.

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INTRODUCTION

The Cemetery and Its Setting

Glenwood Cemetery is situated in downtown Thomaston, Georgia (founded in 1825), about 70 miles south of Atlanta, in central Upson County. The City's population is about 9,100, while about 27,000 live in Upson County. The area is largely rural, with an agricultural economy focused on chickens, corn, and hay. The area's largest employers are associated with various textile mill activities.

The cemetery is bounded by South Bethel Street to the east and Mallory Street to the south. To the west the cemetery is buffered from South Center Street (US 19N) by a strip of commercial lots (Figure 1). To the north, the main cemetery entrance is on South Hightower Street. To the north there are primarily parking lots and government buildings; to the northeast the Robert E. Lee Institute building, constructed with WPA labor in the 1930s, abuts the cemetery. Beyond this building to the east are athletic fields and the now closed Robert E. Lee Middle School. To the south is a lower middle income neighborhood. There are five properties between US 19N and the cemetery, including the Grace Primitive Baptist Church at the northwest and, just to the south, the lot used by Hunter Monuments.

The cemetery is enclosed on its north side by a relatively modern Stewart Iron Works fence, with the main entrance consisting of double roadway gates flanked by pedestrian gates. Along the western and southern sides there is a 6-foot chain link fence, with three entry gates on the south, off Mallory Street. This same fence continued along most of the eastern side, although there is no fence separating the cemetery from the Robert E. Lee Institute building and the chain link fence is replaced by a woven wire fence in the southwestern corner of the property. There is one additional gate on this eastern side, accessing South Bethel.

The cemetery has a generally rolling topography to the north, while the southern two-thirds are very flat. While at one time a number of trees were found on this cemetery, it is today rather stark. Vegetation is largely limited to a mix of grass and weeds, with very little vegetation on plots.

This portion of Georgia is classified as the Piedmont and is characterized by steep to gently rolling thin, well-drained red soil with sand loam surface layers over sand clay to clay subsoils. Much of the original

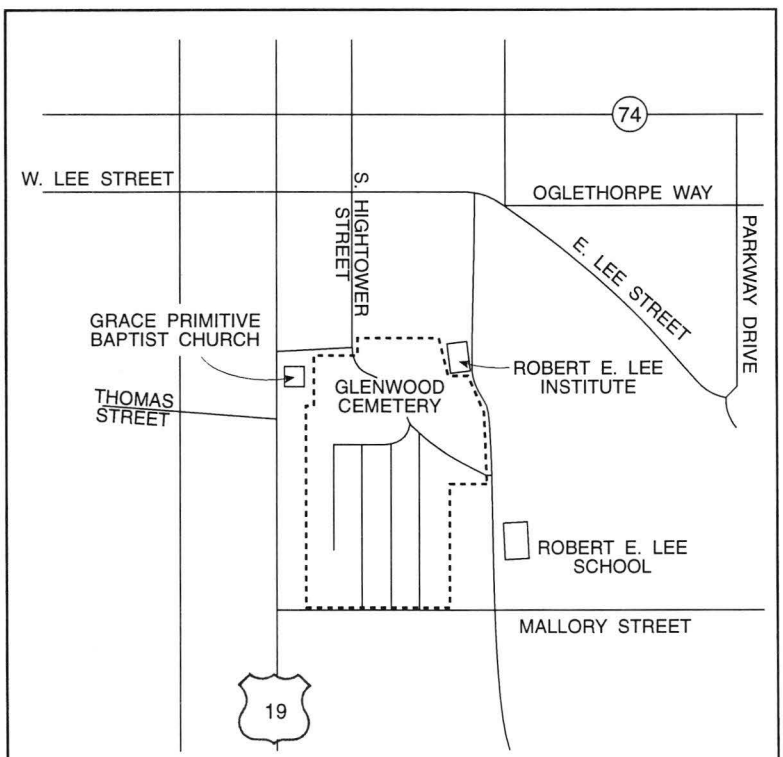

Figure 1. Location of the Glenwood Cemetery in Thomaston, Georgia.

Figure 2. The old section of Glenwood looking northwest.

topsoil has been eroded away and, in Glenwood, much of the surface soil consists of a red clay. Subsoil consists of red clay to at least 5 feet in the one area where a grave was opened during this study.

Monthly precipitation ranges from about 2 to 4 inches. While the average yearly precipitation is about 50 inches, this drops to 30 inches or less during drought years. Temperatures range from average lows in the mid-30s during the winter to average highs in the low-90s during the summer. The project area is situated in Zone 7b of the USDA Plant Hardiness Zone Map, an area characterized by lowest expected temperatures of 5 to 10°F and Heat Zone 8, characterized by 90 to 120 days a year with temperatures over 86°F.

Nature of the Project

In 1999 I was invited by Ed and Linda Hallman to visit the Glenwood Cemetery in Thomaston, Georgia. They recognized that the cemetery has exceptional potential to be an integral element in Thomaston's historic preservation movement. Its age, proximity to the Thomaston/Upson County Archives and the historic district, and the beauty of its rolling topography all combine to make this a special setting. Nevertheless, they also recognized that the cemetery was receiving minimal maintenance from the City of Thomaston and that the cemetery was slowly deteriorating.

During my visit I spoke with many individuals who desired to see the cemetery preserved and better maintained. I recommended that the cemetery receive a thorough assessment and a preservation plan be developed. It was only through this initial step of inventorying and assessing that it would be possible to devise a long-term plan for maintenance and repair.

The City, however, was generally unresponsive and unwilling to devote any resources beyond occasional grass mowing. As an excuse to allow what is essentially abandonment of preservation obligations, some in the City claimed that to do more would "violate" the private property rights of the lot owners (an issue which is discussed in greater detail elsewhere in this study). Like many municipalities who manage cemeteries, individual lots were sold at below market prices and those funds generated went into the general city fund. As a result, there is no endowment or trust fund established for the care and maintenance of the cemetery (Glenwood is but one of three city cemeteries in Thomaston — none have any sort of fund established for perpetual care).

As a result Ms. Linda Hallman, then Regent of the John Houstoun Chapter NSDAR, began an effort to fund this current project. In late March of this year the current Regent, Ms. Sandra Keadle notified us that the DAR had raised the money necessary for a stone-by-stone assessment of the historic section of the cemetery, an overall assessment of the cemetery, and a plan for its long-term preservation. An agreement was signed on April 12 and the work was conducted April

23 through 27, 2001.

The inventory proposed focused on the old, or original, section of the cemetery — essentially the northern third of the property. Such an inventory normally includes mapping and recordation of inscriptions, as well as an assessment of the condition of the monuments. To maintain costs we used a ca. 1950 aerial photograph from which individual plots had been digitized by Ed Hallman. While not rectified and about 50 years old, this provided a relatively detailed base map. We made corrections and additions — resulting in a more comprehensive map distributed with this report. In addition, we have not included inscriptions in our assessment — to do so would have doubled the time, increasing the cost beyond what the DAR was able to raise. We do not feel that the recommendations or plan proposed have suffered as a result. **We do, however, very strongly recommend that the DAR make complete transcriptions of the monuments and add that information to the forms we have provided.**[1]

These modifications allowed our field efforts to focus on conducting a preliminary assessment of the markers and other features (such as coping and fences). The assessment included information concerning the condition of the monument (tilted, broken, staining, and so forth) and previous repairs (a copy of our assessment form is included as Appendix 1; Appendix 2 is a diagram of the different marker types). This stone by stone assessment allows us to make very specific treatment recommendations for those monuments in the old cemetery.

In the newer sections we provided a sample of similar observations, but largely focused on plots, rather than stones. The rationale was not only that the markers are more modern, but also that they tend to be in better condition. Individual stone by stone assessments were not necessary and would have dramatically increased the time involved in the assessment.

We then reviewed a variety of long-term concerns, such as landscape concerns (circulation, lighting, pavement, pathways, site furniture, lawns, and plantings) and cemetery maintenance (staffing, care of the lawn and trees, trash removal, attention to roadways, and signage). For each issue reviewed we make observations concerning current conditions, detailing and explaining problems, then offer recommendations.

While this brief description of our work itemizes individual tasks, it is critical that the reader understand that all aspects of cemetery preservation are inter-connected and it is often difficult to realistically treat them as distinct tasks. For example, there are cases at Glenwood where it would be imprudent to treat a monument without first better controlling landscape maintenance practices. Many issues are also far more complex than they seem on the surface. For example,

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[1] While "inscriptions" are reported to be available for Glenwood, they are only names, birth dates, and death dates. This "short-hand" transcription is common among genealogists, but is inadequate for preservation efforts. For example, compare the detail — and information — provided by this typical genealogical inscription for Glenwood, "E.K. Averrett, b. 6/13/1831, d. 7/14/1916," and what is actually on the stone, "MOTHER / E.K. AVERRETT / 1831-1916 / IN LOVING MEMORY OF / OUR MOTHER / BORN JUNE 13, 1831 / DIED JULY 14, 1916 / — / Here lies the mother of mothers / who was chiefly concerned in / bearing the burdens of others." In another case we have a genealogical transcription that is sterile, "F.F. Rowe, Jr., son of F.F. & L.M. Rowe, b. 8/9/1913, d. 6/10/1915," especially compared to the detail and beauty of the actual transcription, "SON OF F.F. & L.M. ROWE / AUG. 9, 1913 - JUNE 10, 1915 / Your short stay was like the / tarrying of a heavenly messenger. / Nothing can rob our home of the / benediction left by your beautiful / little life, holy, gentle, tender joys, / sweet fancies, precious hopes, [ ]iant dreams./ "And when the sunset gates unbar, / Shall we not see thee waiting stand, / And while against the evening star, / The welcome of they little beckoning hands." / "We prayed that unto you, dear, / God's best gifts might be given. / He answered all our prayers, dear - / He gave you Heaven." While all of the same genealogical information is provided, far too much social anthropology and history is lost through abbreviated genealogical transcription.

there are cases where the historic fences present easy targets for theft. In such circumstances what is the best course of action? Should gates be removed to a "museum" for safe keeping? Should they be altered in a manner that makes their theft less easy, even if that alteration affects the historic fabric of the gate? Should the gates simply be inscribed with ownership information? Or should access to the cemetery and the various plots be made more difficult, in an effort to discourage theft? There are other cases where the care of landscape is having detrimental effects on the preservation of the monuments. Which is to take priority — monuments or landscape — or can the two live in harmony?

There are a number of difficult issues which the caregivers must carefully consider before an appropriate plan of action can be developed. This study will help illuminate some of these issues and concerns.

Readers should be forewarned that this study does not provide specific treatment plans for any of the monuments. The report does, however, provide guidance, in general terms, on which treatments should receive priority, and why. It also offers some general technical comments on treatments and outlines appropriate conservation/preservation strategies, materials, and techniques that should help the caregivers judge the appropriateness of different treatment options and proposals in the future.

Glenwood is not currently listed on the National Register of Historic Places, but I believe that at least the old section is likely eligible under Criterion C (distinctive physical characteristics of design, construction, or form), Criterion Consideration D (a cemetery which derives its primary significance from age and from distinctive design features). This documents the uniqueness of this resource and the history that it represents. It should be treated as the fragile resource that it is. This has not always been the case. Many actions have been undertaken without any clear understanding of their consequences. The following section of the report will help explain why some activities and some "repairs" are inappropriate.

A Brief History of Glenwood

This assessment did not include any detailed or comprehensive historic investigation. Nevertheless, this brief historic synopsis, prepared largely from information provided by Ed Hallman, may help the reader place the cemetery in a broader context.

It appears that the original cemetery property was acquired through conveyances in 1835 and 1860. An even earlier transfer, in 1827, for "Lot number (24) twenty-four in the South back square of Thomaston" was conveyed by the trustees of the Inferior Court of Upson County to the Methodist Church, in response to legislation authorizing the donation (Upson County Deed Book D, page 337). Nottingham and Hannah, however, suggest that this lot was never used.[2]

Instead Nottingham and Hannah state that the Methodist Church acquired their property, "lot No. 21 and a part of lot No. 22" from Simeon Rogers. No deed has been provided to me that would substantiate this conveyance. There was, however, a conveyance in 1835 for "two acres . . . part of lot number Ten in the Sixteenth district." This plot was conveyed by Joseph W. Dawson and Pleasant S. Dawson to the trustees of the Methodist Episcopal Church (Upson County Deed Book C, page 212). Unfortunately, these lot designations seem to have no relationship to the numbering of town lots shown on a copy plat for the town, registered June 2, 1853.

Nottingham and Hannah also mention that Simeon Rogers gave the church an acre "adjoining the cemetery to be used for burial purposes, a part of which was to be used for the burial ground of negroes."[3] Indeed, Simeon Rogers did convey a one acre lot, "being part of lot number two hundred and eighteen" in 1860 (Upson County Deed Book H, page 544). There is no mention, however, of the lot being adjacent to the

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[2] Carolyn Walker Nottingham and Evelyn Hannah, *History of Upson County, Georgia* (Thomaston: Upson County Commissioners, 1930), p.337.

[3] Nottingham and Hannah, pg. 382.

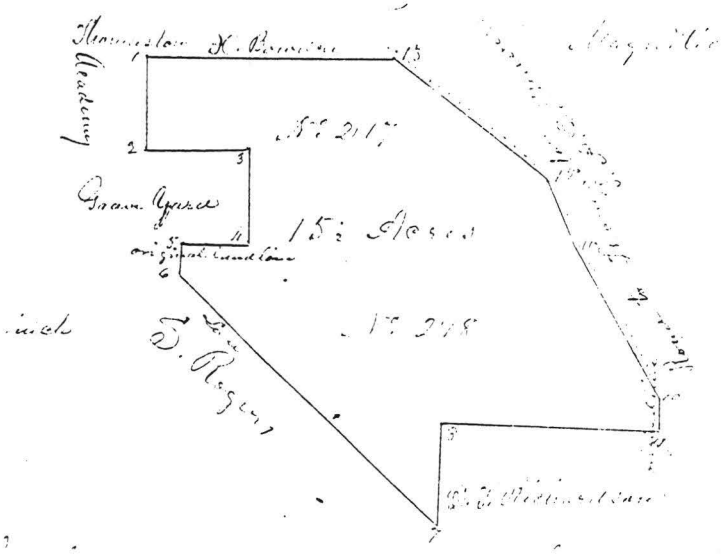

Figure 3. Plat showing the "grave yard" in 1852.

existing cemetery or that a portion was to be used for African American burials.

The only early plat showing the cemetery which has been provided to me is from the 1852 Simeon Rogers deed to Zenophore Bowdre for 15.5 acres which surrounds the "graveyard" on the north, east, and south (Figure 3).

While the early history of the cemetery is vague, in 1901 the Trustees of the Methodist Episcopal Church South of Thomaston conveyed their cemetery to the City of Thomaston. The two acre property was described as:

> that part of town lot No. 24 in the South back square of the town of Thomaston, Ga. not previously sold to W.Y. Daniel. Also, the acre of land more or less which on 20th day of Febry 1860 Simeon Rogers deeded to the trustees of this church, which appears on Record in Book "H" page 544, Mch 9th 1860 in Clerks office Upson Superior Court.
>
> The above described property being the Cemetery owned by the Trustees of the Church (Upon County Deed Book Y, pg. 123).

The deed went on to specify that the property "shall continue a cemetery operated and controlled by the Mayor and Council of the City of Thomaston, Ga. in connection with the property adjoining recently acquired by the City of Thomaston, Ga. for the benefit and use of the white people and for interring white people only."

Based on the deed descriptions and the configuration of the property, we believe that this 2 acre tract is roughly that portion today recognized as Lot 217, measuring about 497 feet east-west by 184 feet north-south (which would equal about 2.1 acres).[4] The approximate boundaries of this original or old cemetery are important, since the City was conveyed this property in fee simple and is the owner of that portion, with all rights and obligations of ownership.

Through time, the City has added an additional 6.25 acres (today the cemetery totals 8.25 acres). For example, we have been provided a plat dated October 20, 1914 which is identified as "Addition Glenwood Cemetery" and which shows a series of 140 new plots of various sizes. The southern boundary of this plat is Mallory Street, while to the north is the notation, "Old Cemetery," suggesting that by 1914 the original Methodist cemetery had already blended with the additional land "recently acquired" by the city according to the 1901 deed.

We are told that in the 1930s the Robert E. Lee Institute auditorium was constructed using WPA

[4] This is supported at least in part by a quit claim deed issued to the City in 1936 for the northeastern portion of the cemetery by the Trustees of the Thomaston Methodist Episcopal Church South (Upson County Deed Book 73, page 404).

labor and that during this work the African American burials were removed to another City cemetery. We have not, however, been presented with any documentation (such as work reports from the WPA project or newspaper accounts) which would support this report. Nor has anyone told me specifically where the removed African American burials were relocated. I have also been told that a gas line for this building was placed through existing graves — although again there is no written documentation.

We are informed that the City of Thomaston, in spite of their ownership and expansion activities, does not have a complete map of the cemetery, or even a plan showing all of the various additions. Nor does the City have any ownership records for the cemetery. Further complicating the matter, while some plots were sold by the City using standard legal forms which are recorded as deeds in the Upson County Court House, others were simply "conveyed" by petition to the City Council and the only record is found in the minutes of various council meetings.

This brief account should make it clear that the City of Thomaston needs to have a thorough, professional history of the cemetery completed. This should include a complete title search and preparation of an overall land acquisition plat. At the same time an effort should be made to identify and examine all titles issued for plots in the cemetery.

Understanding Conservation/Preservation

There is a tendency for governing organizations to act in haste when it comes to cemetery preservation and to engage in activities and repairs which are not in the best long-term interests of the cemetery. At least one reason for these problems is that governing bodies are often not aware of acceptable conservation procedures. Being unaware that some approaches are better than others, they are often swayed by commercial appeal, low cost, or advertising claims.

In addition, it is not adequate for a material or technique to be specified. The architect and/or engineer responsible for the work should make certain that the specified work is conducted in the specified manner. It should never be assumed that contractors are willing to use, capable of using, or knowledgeable concerning appropriate preservation techniques or materials. Someone who does have this familiarity must be assigned to constantly oversee the work and certify that it has been correctly performed. Unless this level of oversight is available, no work should be contracted.

There are certain minimal ethical standards to which any activity in a historic cemetery should adhere:

1. The condition of the object (whether stone, iron, or some other material) must be carefully documented ***before*** any intervention.

2. All methods and materials used during treatments must be fully documented to help future generations understand what was done.

3. Any intervention must be the minimum necessary. Less is almost always considered better.

4. The intervention must be governed by unswerving respect for the aesthetic, historical, and physical integrity of the property. In other words, it is essential that the historic fabric be respected.

These rules apply whether we are discussing brickwork, ironwork, stonework, or even landscaping.

It is also useful to understand the essential difference between "restoration" and "conservation/preservation." One of the foremost architects of the nineteenth century, John Ruskin, commented that *restoration* "means the most total destruction which a building can suffer." The same can be said for cemetery stones and brickwork.

Restoration means returning an object to "like new" condition. This approach typically shows disregard for the original, historic fabric, replacing bits and pieces here and there in order to make the historic object new.

This approach also often mixes incompatible materials — causing deterioration of the very object that we are attempting to preserve.

In contrast, *conservation/preservation* seeks to minimize future deterioration, stabilizing an object's condition and maintaining its integrity. Essential to our understanding of conservation and preservation is also an appreciation for appropriate maintenance. I have found that preventative maintenance will often dramatically reduce the need for far more costly, intrusive, conservation treatments. In other words, by appropriately repointing brickwork we may slow deterioration and often prevent more drastic intervention, such as rebuilding wall sections. By appropriately pruning trees we can forestall their loss through disease or by storms and the resulting damage to stones and monuments.

This report focuses on conservation and preservation and I encourage the caregivers at Glenwood Cemetery to likewise avoid efforts of "restoration" that are likely to cause more harm than good.

Finally, those serving as caregivers at Glenwood must understand that **all conservation repairs or treatments are routine maintenance** — they must not be considered permanent. There is virtually nothing which can be "done" and then forgotten. Just as a home or building requires constant attention and repair, so too will objects that receive conservation attention.

Acceptable Conservation/Preservation Procedures

We will briefly outline a few critical issues for different conservation or preservation approaches at Glenwood. In some cases volunteers may be able, with training, to carry out simple activities. In many cases, most particularly conservation of stone, volunteers are strongly advised not to undertake the work. In fact, even professionals in related fields may be inappropriate. Just as one would not ask a house painter to repair a portrait, it is important that handymen or stone/brick masons familiar primarily with modern materials and techniques not undertake the conservation treatments outlined in this assessment. The work should be completed by conservators thoroughly familiar with the exacting requirements of the treatment involved.

Stone Conservation

Fragment storage protects fallen or broken stones from loss and damage. At present there appears to be no procedure to ensure that damaged stones are identified and cared for. I found bits and pieces of stones in different locations throughout the cemetery. In many cases broken stones have been left lying where they fell — this is irresponsible management that

Figure 4. View of recently toppled marker (I-100) which failed along an old repair. When the marker hit the concrete ledger it shattered. Leaving this marker exposed will only compound the damage and encourage theft.

endangers the stone and shows disrespect for both the monument and the individual buried there (Figure 4).

Repairing damaged stones is the surest way to protect them, but in many cases fragments can be provided temporary storage until funding is available for repair. Temporary storage should be in a dry, secured facility. Individual items must be marked with information concerning where they were found. One solution would be to mark the location on a map and include that map with the stored stones.

At Glenwood a perfect storage solution would be basement of the Archives building.

Resetting is a common need at many old cemeteries. The simplest resetting involves stones which are tilted or which have come out of the ground. These should never be reset using concrete, but rather should be set in pea gravel and sand.

In cases where stones are loose in a supporting base, resetting involves the use of a wet, high lime mortar mix. Appropriate is a 1:4:8 mix (1 part of white Portland cement, 4 parts hydrated lime, and 8 parts clean graded sand). **Cement, mortar mixes, epoxy, or other adhesives should never be used for this purpose.** There are a great many examples, even in the newer sections of Glenwood, were resetting is critical.

At times resetting may be made more complex by the presence of corroded iron or brass dowels. Often these will need to be removed before the stones can be reset. Such a repair requires that the old pins be drilled out using a core drill, new pins of stainless steel be inserted using an appropriate epoxy, and mortar then used to set the monument.

Cleaning stones simply **for the sake of appearances is usually ill-advised**. Such efforts endanger the stone and often promote even quicker soiling afterwards. Where cleaning is critical, it should be limited to the use of low pressure (i.e., less than 90 p.s.i.) water and soft bristle brushes. All other chemicals should be avoided without the specific advice and recommendation of a conservator.

Commercial stone cleaning methods are generally not appropriate for use in historic burial grounds. **In absolutely no case should sandblasting, stone refinishing or polishing, or high pressure chemical or water washing be used at Glenwood Cemetery. Commercial cleaning agents should only be used under the direction of a stone conservator.**

Coatings are not recommended for any stone material at Glenwood. Many coatings are actually detrimental to the stone, causing staining, efflorescence or scaling. Moreover, coatings are not reversible, so once applied they are impossible to remove should detrimental effects be noted. There are a very few that appear to be vapor permeable and are being tested for possible use on stone. Even these, however, should be used only under the direction of a stone conservator and

Figure 5. Example of a stone (II-34F) in critical need of resetting. The loose tab and tilting pose a significant breakage hazard to the stone. It is far less expensive to reset such stones than to repair them once broken.

Figure 6. Example of a failed old repair which has resulted in additional damage. Note the continuous bead of adhesive on the exposed old break and also the fragments of new stone that were torn off because the adhesive was stronger than the stone itself. Repair will involve removing the old adhesive and pinning each break.

sparingly.

Mechanical repair most often means the rejoining of fragmented stones. **Such work should be undertaken only by stone conservators trained in this area.**

In most cases gravestones are fragile and their repair is delicate work. There are many commercial products on the market, used by many commercial stone companies, that are totally inappropriate for historic stone.

Appropriate conservation treatment will usually involve drilling and pinning, carefully aligning the two fragments. Threaded nylon rod (or occasionally stainless steel) and epoxy adhesives formulated for the specific stone are used in this type of repair. Diameters and lengths of pins vary with the individual application, depending on the nature of the break, the thickness of the stone, its condition, and its expected post-repair treatment.

Sometimes pins are not used to save time and money. Instead the pieces are simply joined using a continuous bead of epoxy or some other adhesive. There are many examples of this type of repair at Glenwood (Figure 6). While some are still stable, many others have already failed. Experience indicates that for a long-lasting repair, even in non-structural applications, use of pins is necessary. Moreover, most

Figure 7. Example of a failed old repair (I-49) which used iron rods. These rods are now corroding and will need to be removed before any repair can be accomplished. The old rods were also far too short to offer any effective support. Note the still intact beads of adhesive — indicating that the stone pieces did not even make contact in these areas.

Figure 8. Example of collapsed box tomb (II-15). Repair will require lifting of the marble ledger, reassembly of the granite box, and replacement with leveling of the marble ledger. This is an example of a critical treatment; failure to act will result in the breakage of the marble ledge, leading to a far more expensive repair.

adhesives are far stronger than the stone itself, meaning that failure of the repair is likely to cause additional damage to the stone.

At times mechanical repairs also involve dismantling intact elements and ensuring that a sound foundation is present. Foundation work may involve filling in depressions, establishing a concrete footing, or taking other measures to ensure that subsidence is minimized. Then the entire structure is repaired as it is reassembled.

In some cases concrete has been used to effect repairs of broken stones. This is inappropriate. Not only is the result aesthetically unappealing, but the concrete is far harder than the stone and can cause long-term deterioration. Because the concrete is very difficult to remove, I generally recommend that stones repaired with concrete be left as they are, as long as the old repair is stable and causing no immediate damage or problems. Such repairs, however, should be carefully monitored. It is likely that the time will come when these old repairs will fail and a more appropriate repair will become possible.

Composite stone repair consists of filling voids with a natural cementitious composite stone material resembling the original as closely as possible in texture, color, and strength. This type of repair may be used to fill gaps or losses in marble and is often used to help slow scaling of bedded sandstone exposed to the elements.

Under no circumstances should latex materials be used in composite stone repair. A more suitable material is a product called Jahn. This closely resembles the natural strength of the original stone, contains no synthetic polymers, exhibits good adhesion, and can be color matched if necessary.

Such work, however, is likely to only slow down the natural deterioration.

Figure 9. Example of a cradle grave with a displaced plaque marker (III-21J), now resting on the cradles. This stone requires resetting before the cradles are damaged.

Brick Conservation

The primary use of brick at Glenwood is in the construction of twentieth century copings — either as a finishing course on CMU or concrete or as a stand-along coping wall. In general the brick work is in sound condition, although we did note failure of corners, some wall sections, and finishing courses. We also noted that often the repair work exhibited poor workmanship which detracts from the historic character of the cemetery and fails to respect the original materials.

Repairs should always begin with photographing the structure as it exists in order to completely document the original fabric and construction details. Only the unsound brickwork should be removed, stopping as soon as sound material is encountered. Repair should, as far as possible, use similar brick, mortar, joints, and tooling. Brick should match in size, hardness, texture, and color. Mortar should match the original in color (although minor post-treatment discrepancies can often be solved using tinting materials[5]), texture, and most importantly, strength.[6] Historic bricks are often far softer than modern examples. The use of a modern hard cement mortar will cause extensive damage to this soft brick as one expands more rapidly than the other. Mortar should always be designed to deteriorate more quickly (meaning the use of high lime mortars) than the brick since it can be readily replaced through pointing.

The single best guide to historic brick work is provided by the Association of Preservation Technology; their guide to brick work is reproduced here as Appendix 3.

Figure 10. Example of a plot wall (I-55)which has failed. Repair is necessary to prevent the plot from eroding downslope. The work should use as many of the original bricks as possible.

Concrete Repair

Concrete has been extensively used in the

[5] One example of a chemical toner for mortar is Epochrome-S. It is available from Cathedral Stone, 800/684-0901.

[6] While historically appropriate mortar can be mixed using a 1:2:6 to 1:3:10 ratio of white Portland Cement: hydrate lime: sand, recently a prepackaged mix, Restomix, has been marketed. This product is superior when only small jobs are undertaken, since it assures that the materials and mix is consistent. It is available from Cathedral Stone, 800/684-0901.

Figure 11. Example of a poorly repaired plot wall. Replacement bricks fail to match either the color or texture of the original work. The mortar joints are uneven and have not been tooled. The mortar itself is the wrong color and fails to match the older material. The poor workmanship is also revealed by the failure to clean off the bricks.

twentieth century Glenwood plots, both as ledgers covering the burial, and also as coping. Much of this concrete is in failure, or has already failed.

One of the most common — and clearly obvious — problems is shown in Figure 12. Large quantities of this rounded coping on family plots exhibits spalling, crumbling, and complete failure. Careful examination reveals that the concrete exhibits no structural strength and crumbles. The mix also exhibits the use of very large quantities of clinkers as aggregate. Since this concrete is very common at Glenwood, this must have been a widely available, and used, commercial mix. The deterioration may be related to the sulfates present in the clinkers. These sulfates react with the concrete to form gypsum which expands in the concrete and causes bowing, buckling, crumbling, or scaling of the concrete surface. Alternatively, the clinkers are porous and can encourage frost spalling. In such cases the only remedy is to remove the concrete and replace it with an appropriate mixture.

Other concrete exhibits spalling that is probably related to its

Figure 12. Example of failed concrete coping (I-48). Large sections are spalling off, probably because the mix used clinkers (note the large specimen in the spalled section).

Figure 13. Spalling concrete coping which has been previously whitewashed. Here the spalling is likely the result of an inappropriate mix or excessive floating of fines to the surface.

absorption of moisture and freeze-thaw action. Some damage may also relate to the failure to adequately compact the concrete and eliminate entrapped air (each 1% of entrapped air can reduce the strength of the concrete by 6%). This concrete is even more susceptible to frost action.

There are basic procedures to be followed in concrete use, yet shortcuts are often taken that ultimately result in significantly compromised concrete. The durability of any concrete depends on the quality of the mix and workmanship involved in mixing, placing, compacting, and curing. For example, low permeability of finished concrete depends on the hydration of the cement to fill interstice voids that are initially filled with water. Keeping the newly cast concrete moist prevents the fresh concrete from drying too quickly and allows hydration to continue; this, in turn, promotes greater durability.

Some concrete problems at Glenwood may be remedied by various proprietary concrete patches, but we urge caution in their use. For example, in the case of limited spalling, repair would involve removing the loose, deteriorated concrete and installing a compatible patch that dovetails into the existing sound material.

Much of the concrete at Glenwood was originally whitewashed. This is an old practice that served multiple purposes. Historically the hydrated lime served as a disinfectant and pesticide. In a cemetery it also allowed concrete to more readily resemble marble. The thick lime applications may also have served to maintain the alkalinity of the concrete and promote its preservation. It forms a tough outer coat that readily bonds to the concrete.

Figure 14. Example of scaling concrete ledgers at Glenwood. Here the damage is probably associated with excessive moisture penetrating the surface layer and freezing during the winter.

Today there are still a few plots which are "whitewashed," although it appears that various latex paints are being used in lieu of traditional whitewashing. Many other plots have not been maintained and the whitewash remains only as streaks.

Figure 15. Iron fence (I-21) with bottom rail partially buried below grade. Constant exposure to soil moisture hastens corrosion. The solution is simple — uncover the buried ironwork and ensure that the fence is appropriately prepared and painted.

One simple whitewash mix consists of mixing 50 pounds of hydrated lime with 6 gallons of water. Cover the mix with a thin lens of water, cover the container, and allow it to sit 12 to 24 hours. Dilute the resulting lime putty with sufficient water to make a thick, creamy mixture. This should be applied (using a masonry brush) to clean, well wetted surfaces. Wait 30 to 60 minutes between coats, just to the point that the moisture sheen disappears; do not allow the whitewash to dry out entirely between coats. Four coats are usually sufficient. After the sheen has left the last coat the whitewash should be burnished by stroking a clean, dry brush in a circular pattern to seal and smooth the surface. Those applying the whitewash must be instructed in appropriate safety precautions — lime putty and whitewash is very caustic and can burn the skin and cause serious eye damage.

Ironwork Conservation

Every effort should be made to retain all existing ironwork, regardless of condition. Replacement with new materials is not only aesthetically inappropriate, but often causes galvanic reactions between dissimilar metals. When some of the existing ironwork is incomplete, a reasonable preservation solution is to repair and maintain the remaining work rather than add historically inappropriate and incorrect substitutes. If replacement is desired, salvage of matching elements is preferred over recasting. Replication is typically not an appropriate choice since it is by far the most expensive course of action, and is often done so poorly.

The single best protection of ironwork is maintenance — and this revolves around painting. Painting maintenance should begin with a good surface cleaning, followed by removal of loose rust and flaking paint. Typically a stiff wire brush is adequate for this.[7] A rust inhibitor (or even a rust converter) may be applied as an undercoat. There are also paints which include rust inhibitors which may be used. Alkyd should be used rather than latex, although there are also a new generation of epoxy paints which may be suitable. In no case should the paint be applied thickly — this obscures detail **and does not appreciably lengthen the**

[7] Abrasive cleaning is appropriate for cast iron, which is sufficiently hard. Wrought iron, however, is softer and the surface can be easily roughened. Other methods of cleaning should be sought first. If abrasive cleaning is necessary, it is advisable to begin with a starting pressure of about 20 psi with a fine (50/100) slag grit. Final working pressure is not likely to exceed 60-70 psi with a working distance of at least 12 inches.

lifespan of the paint. In fact, thick paint can chip more easily than a thinner coat. An appropriate color, lacking any other historic evidence, is flat black. Gloss enamels should be avoided.

Repair may include reattachment of elements. Ideally repairs should be made in a manner consistent with original construction. For example, most newel posts were originally attached to a stone or masonry base using a threaded rod packed in lead. When this assembly is loose, the ideal approach is to replace the threaded rod, repacking it using lead or an epoxy filler.

It may also be appropriate to use small stainless steel braces with stainless steel nuts and bolts to re-attach coping rails to posts. While welding is often expedient (and *may* be better than *inappropriate* mending), this approach causes a radical change to the fence. Once welded, pieces are no longer able to move with expansion/contraction cycles, this causes internal stresses that may lead to yet additional structural problems.

In addition, while wrought iron is easy to weld because of its low carbon content, cast iron contains up to 4% carbon and is difficult to weld. Welding on cast iron should be done only by firms specializing in this work and capable of preheating the elements.[8] An alternative is to braze cast iron since this approach requires much less heat.

When used, welds should be continuous and ground smooth, in order to eliminate any gaps or crevices. When finished, it should be difficult to distinguish the weld — the original metal should blend or flow directly into the reattached part.

Another problem observed at Glenwood is the burial of the bottom fence rail in either soil or in concrete (the latter is often used mistakenly used as a method of "strengthening" the fence). In either case moisture is held against the ironwork, promoting extensive corrosion (Figure 15).

When the fence is buried in the soil all that need be done is to resculpt the ground, lowering it below the bottom rail. This can not only resolve the corrosion problem, but can also promote better drainage away from the ironwork. When the fence is placed in concrete the solution is more complex since removal of the concrete is time consuming and costly. As a temporary measure it may be necessary to treat the symptom, by minimizing corrosion.

Perhaps the most significant threat to the ironwork, however, is theft. Glenwood is exceedingly fortunate to have a wide variety of relatively intact ironwork — and a number of very ornate gates. All are attractive to thieves and the cemetery caregivers must take immediately take steps to reduce the potential for theft. This issue will be more fully discussed in a following section on security.

Rock Wall

Glenwood contains one rock wall, about two-thirds of which is currently in failure (Figure 16). At least as far back as 1993 the wall was partially collapsed.

Constructed of random sized rock rubble, the wall appears to be mortared together using a relatively hard Portland cement. This brief examination suggests that it may not predate the last quarter of the nineteenth century. Regardless of age it should be considered a significant, and memorable, cemetery feature and every effort should be made to preserve it.

In addition, the "fence" as it now exists must be considered a threat to cemetery visitors — not only may it harbor rodents and snakes, but children climbing on the wall may be seriously hurt as sections collapse. It is in the best interest of the caregivers to give this wall a very high priority. Repair should consist of removing and sorting all of the rubble and recreating the wall as best as possible using original materials, set in an appropriate mortar mix matched by color.

The wall also has a stucco or parging of cement. Prior to the late nineteenth century stucco was a mixture of hydrated lime, sand, and water, resulting in

[8] The reason that cast iron is so hard to weld without cracking is its rigidity. When one small area is heated, causing it to expand, the unheated area resists — and cracks.

a soft, flexible coating that breathed. With the introduction of Portland cement ca. 1871 stucco became hard, brittle, and relatively impermeable. This cement stucco traps rising damp and, because it is so inflexible, tends to come off in sheets.

Figure 16. Rock wall (I-25) showing extensive failure and collapse of the upper walls. Repair should be given a high priority since this feature poses a hazard to the public.

While repair using Portland cement stucco is possible, we recommend consideration be given to using the Jahn M60 Exterior Stucco, a single component, cementitious plaster which can be color matched. This approach would greatly reduce application time and would help eliminate irregularities in the mixture.

Understanding Priorities

With limited funds it is often critical that organizations establish priorities for cemetery conservation/preservation projects, ensuring that the most critical issues are dealt with first. Sound priorities will be based on two factors:

> First, is the object a threat to people? Examples of this include loose monuments which might topple, diseased trees which might shed limbs unexpectedly, and brick walkways which are tripping hazards.
>
> Second, is the object a threat to itself? In other words, if left unattended, will the condition deteriorate and cause additional damage, and expense to repair? Examples of this include corroding ironwork, monuments which might topple and break, and trees growing against other cemetery features.

It should be abundantly clear that first priority items require immediate — even emergency — treatment in order to ensure the safety of visitors and avoid claims of liability against the City of Thomaston.

Second priority items are nearly as important since failure to deal with these items will result in repairs costing far more as the condition deteriorates. **Deferred maintenance is not only poor stewardship, but it is fiscally irresponsible.** Simple repairs, delayed, turn into very expensive treatments.

Beyond these two priorities, all other issues in the cemetery fall into a third category. Examples might include infill, replacing missing features or elements, repairing most coping, and cleaning of stones. It is far more critical that the caregivers establish, as their third priority, a preventative maintenance program that will

help to ensure that appropriate maintenance is carried out on an on-going basis, limiting the need for future emergency treatments. Only once all priority one (threatening to human life) and priority two (threatening to the safety of the monument or other features) and a preventative maintenance program is established, should the caregivers of Glenwood turn their attention to more cosmetic repair issues.

LANDSCAPE ISSUES

Circulation

Glenwood cemetery fronts two streets — Mallory to the south and South Bethel to the east (Figure 1). The main entrance, however, is off South Hightower. This street is one-way, providing only southerly access off West Lee Street and dumping traffic onto South Central Street, which is also one-way to the north. South Hightower, therefore, is little more than an alleyway which provides access to a government complex directly north and northeast of the cemetery. To the northwest is a vacant lot used for parking.

Figure 17. Main entrance to Glenwood off South Hightower. Note the poor condition of the roadway, the car parked at the yellow curb, the distant "No Thru Traffic" sign, and lack of any regulatory signs for the cemetery.

An effort has been made to make the main entrance off South Bethel impressive and dignified. There is a double drive gate manufactured by Stewart Iron Works flanked by two pedestrian gates. The main gates are lettered, "GLENWOOD CEMETERY."

This effort, however, is largely lost. The entrance street is difficult to find, dominated by a modern government complex, characterized by deteriorating pavement, overshadowed by hardscape, and situated at a corner. To compound matters, although the curb adjacent to the gates is painted yellow, this seems to have no effect. During this study there were frequently cars parked at this yellow curb and enforcement was consistently ignored by passing City police.

Within the old, northern section of the cemetery there is a road which runs from the main entrance southeasterly to South Bethel Street. Branching off from this street is an east-west road, which dead-ends at plots along the western side of the cemetery. Branching off from this east-west road are a series of four north-south roads, three of which provide access to Mallory Street. The fourth north-south road dead-ends without warning in the midst of plots.

All of these roads are narrow, on average about 12 feet in width, and lacking curbs or gutters. They are currently paved in asphalt (discussed below).

Figure 18. Example of construction trailer on north-south road off Mallory, with only inches of clearance on either side. To the right is plot V-4, which has been previously damaged by a vehicle.

A "NO THRU TRAFFIC" sign is located so far to the left of the main entrance that it can be easily overlooked. This, coupled with a complete lack of enforcement, has lead to the cemetery being a very busy cut-through. During the week of our work at Glenwood we counted, on average, one car an hour using the cemetery as a cut-through, primarily to South Bethel, but also occasionally to Mallory Street. Thomaston's practice of one-way streets in the downtown area has encouraged the use of the cemetery for this practice.

Not only does this thru-traffic deteriorate the solemn dignity of the cemetery, but it presents a hazard to those visiting the cemetery for legitimate purposes and it endangers the stones and coping (an issue which will be discussed in more detail in a following section).

The circulation pattern at Glenwood has been poorly planned and even more poorly executed. The roads allow only one-way travel, although this is not specified, and there is no room for either passing or parking within the cemetery. This is, in short, about the worst situation that could be designed for a cemetery.

In terms of normal, daily cemetery operation, we recommend that the South Bethel Street gate be closed. Likewise, we recommend that the two most eastern road gates on Mallory be closed. This would leave open, on a routine daily basis, the main entrance off South Hightower and the western most gate on Mallory. This practice would make the use of the cemetery as a cut-through far less attractive and naturally discourage this practice.

All of the roads would remain open for access to points in the cemetery, but would require visitors back out. While this may be difficult for some visitors, appropriate signage warning them of the closed gates would provide an opportunity for parking in an area without the need for access and walking to visit the grave site.

When there is a funeral in the cemetery all of the gates may be opened for an hour before and an hour afterwards, to provide for easier access and traffic flow. However, the gates must be closed afterwards.

We acknowledge that this is not an ideal situation — it would be far better that roadways looped through the cemetery, allowing one or more continuous circuits. This, however, is not possible with the way the City of Thomaston has laid out the roads during the various expansions.

Issues of the entrance hardscape, regulatory signage, the roadways, and pedestrian access will be addressed in following sections.

The Roadways

As just discussed, the roadways are narrow and poorly designed. While not so designated, the roads are suitable only for one-way traffic. Even on straight-aways

Figure 19. Example of concrete coping with extensive damage from repeated vehicular impacts.

the roads are too narrow for use of construction vehicles. During this assessment a vehicle with a backhoe trailer was brought into the cemetery off Mallory. Going against the commonly prevailing traffic pattern this vehicle had only inches of clearance on either side (Figure 18). This practice endangers plots and extremely valuable fences. While the drivers may be experts with many hours of experience, no one is perfect and sooner or later, damage will occur.

We recommend that the caregivers prohibit any construction trailers from access to the cemetery. Such trailers should be forced to park outside the cemetery, off load equipment, and carefully drive the equipment on paved roads for access to plots.

Turns in the cemetery are at sharp right angles. It is difficult making any of the south turns off the east-west road. As a result, grass is worn and soil is compacted. Even more significantly there is extensive evidence of coping damage directly related to traffic (Figures 19 and 20). Even fences show damage from previous traffic accidents (the fence in Figure 18 has been shattered by a previous collision and Figure 21 shows a gate torqued by a vehicle). Figure 22 shows where several monuments have been run over — with one broken — by a driver cutting through a plot.

While there is no doubt that some — perhaps much — of this damage has been done by careless drivers, probably using the cemetery as a through-way, even careful drivers will find the turns difficult to impossible, especially at any speed over about 2 miles an hour.

We recommend that bollards be installed at all corners and adjacent to fences in order to protect plots from additional vehicular damage. While the typical bollard previously used in the cemetery consists of an concrete filled iron pipe, these are not

Figure 20. Example of brick coping damaged by vehicular impact.

Figure 21. Example of a gate (V-8) twisted and damaged by a vehicle.

In addition, the construction of the cemetery roads is poor, failing to provide curbs, gutters, or even crowning. Most glaringly, however, the roadway which has only recently been repaved, is already in disrepair. Grass is breaking through the asphalt in many areas and this will cause further deterioration. In several other areas the road base material may not have been adequate and the road has crumbled. In one area a large mass of crush-run has been added in an effort to fill in the holes created by the collapse of roadway material.

For these problems to be occurring so soon after the City paid for the resurfacing of roadways which receive relatively little traffic suggests that the resurfacing contract was poorly handled and insufficient effort was put into outlining the job specifications and/or there was too little monitoring and inspection of the project.

very pleasing and an alternative design should be sought. The bollards currently be used are so low that they often cannot be seen. The new ones should be visible, providing an early warning to drivers.

While asphalt may be an inexpensive and common road material, it is harsh and fails to blend in with the historic fabric of the cemetery. A far better choice — both in terms of the cemetery aesthetics and also longevity — would be some form of concrete or brick paver. These pavers help soften the hardscape, offer a more aesthetically pleasing surface, and provide superior performance. They also offer the potential for easy replacement of damaged sections. Given the low volume of traffic, it might even be possible to use a paver which allows grass to grow, diffusing the hard pavement appearance and minimizing runoff and drainage problems. A herringbone pattern is usually recommended for concrete grass pavers which are subject to vehicular traffic.

Figure 22. Marble lawn type markers (V-3G and H) shifted out of position by a vehicle making a sharp turn. One marker has also been broken.

Figure 23. Section of the Glenwood Cemetery road which is already in failure and which has been "patched" used loose crush-run gravel. Notice to the side imprint of heavy equipment.

Typically asphalt paved roadways should have soil compacted to 95%, a 3-inch granular base course, a 1-inch binder course, topped with a 1-inch bituminous surface. In contrast, many grass pavers allow for the use of 4-inches of gravel on compacted soil, topped with 2-inches of sand. The voids may then be filled with sod.

Regardless of the cause, **the roadways are already beginning to again deteriorate and the City will need to take immediate steps to either appropriately repair these roads or replace them with a more durable material.** If the town does not have the expertise to adequately specify and inspect this kind of work, a contract with a civil engineer should be sought.

Pedestrian Pathways

There are very few pathways at Glenwood. This is surprising since we have been told by at least one town official that the roads are critical for all of the elderly who visit the cemetery. If the cemetery does, in fact, cater to the elderly in the community, the absence of safe and secure pathways to different sections of the cemetery is a serious concern.

In fact there are only two extant and defined pathways, both leading from the main entrance pedestrian gates south, into the cemetery and consisting of concrete sidewalks. The eastern sidewalk curves and meets with the roadway, where it disappears (it originally extended across the roadway, but this area is now largely covered with soil and has ceased functioning). The western sidewalk continued midway into the old section of the cemetery and terminates.

Neither sidewalk serves any real function, especially since the pedestrian gates are often locked and there are relatively few pedestrians touring the cemetery. Nevertheless, the sidewalks present a ragged appearance of the cemetery. As Figure 25 reveals, the grass is not trimmed and the appearance is one of lack of concern and attention.

In general the concrete is sound, but **grass along the sides needs to be trimmed and herbicide should be applied to the expansion joints in order to maintain the appearance.**

Elsewhere there are generally poorly defined pathways between plots, providing some east-west access from the north-south roads. These pathways are not consistent in location or width. Nor are they consistent in ease of passage or ground condition. The cemetery has been so imprecisely laid out that consistent pathways appear impossible to achieve.

Figure 24. Grass breaking through recently repaved roads at Glenwood Cemetery.

We do not recommend that additional pathways be created or that the existing grassed pathways be replaced with paved ones. Instead, **we believe that signage (discussed below) should inform visitors to be careful and encourage them to respect the graves of others.**

Site Fixtures and Furniture

Glenwood is very sparsely appointed. While there are several benches associated with individual plots, we found only one "public" bench. This fixture appears to have originally set near the main entrance under a cedar tree, but has been moved to a different section of the cemetery. There is still much concrete rubble in the original location, as well as torn up turf (Figure 25).

No one we spoke with knew who authorized the bench being moved or why it was moved. The original bench location was probably more "peaceful" and was certainly in the more historic core of the cemetery. Regardless of location, to leave the concrete debris and torn up turf is very poor and uncaring management. **This reveals that maintenance activities in the cemetery are not only poorly documented, but also poorly planned and executed.**

One of the first considerations is whether the caregivers feel that it is appropriate — and safe — to provide sitting areas in the cemetery. Will this encourage loitering and discourage legitimate users? Or will it provide respite and shade to those touring the cemetery?

Based on our brief time in the cemetery, we observed no one "touring" the cemetery on-foot except one school group. Those who came to visit graves always did so in an automobile. Moreover, it does not appear that Thomaston has been proactive in encouraging pedestrian tours of either historic sites or downtown businesses.

On the other hand, we did observe, especially very early in the morning, a number of pedestrians cutting through the cemetery. Some appeared to be walking to work, while others appeared homeless and we were panhandled once during the project — about 7:20 AM.

Based on this, we do not encourage the use of additional benches or sitting areas. This recommendation would change, however, if Thomaston begins to promote its historic district and encourage walking tours of the downtown. **We do recommend that the concrete debris from the bench relocation be immediately collected and that the lawn in this area be reseeded.**

Figure 25. Concrete debris and torn up grass in the previous bench location.

An even more noticeable absence in the cemetery are trash receptacles. None are provided within the cemetery or at any of the gates. As a result, we found flowers and other debris scattered throughout the cemetery. In one area we even found a rather large pile of discarded flowers and floral debris. We found at least five floral stands abandoned in different areas of the cemetery. Throughout there was other trash, such as plastic bags, cups, worn out work gloves, and so forth.

We recommend that the caregivers set up trash receptacles at strategic locations throughout the cemetery. Ideal locations will combine ease of use by patrons with ease of maintenance. Suggested locations, therefore, are by roads, such as adjacent to the sidewalks at the main entrance, in the area where the road running from the main entrance to South Bethel joins with the east-west road, at the terminus of the most westerly north-south road, at each of the three exits along Mallory Street, and at the South Bethel Road exit. This would provide seven trash receptacles.

Stewart Iron Works provides a very classic Victorian litter receptacle consisting of steel pickets with an insert for trash (their model LR200). They can be mounted on concrete blocks for security and are easy to maintain. There are, of course, a variety of other manufacturers and styles. Caregivers should select containers that are easy to use, provide a holding capacity of at least 30 gallons, are relatively maintenance free, and fit the dignified atmosphere of the cemetery. This would generally eliminate plastic — it simply does not hold up — and would eliminate stand-alone trash cans — which are far too intrusive and which can be the objects of vandalism.

Figure 26. Dump area for old flowers and floral debris south of plot II-78.

Caregivers should ensure that these trash cans are emptied at least weekly (this is further discussed in a following section on maintenance).

Security and Lighting

Presently the cemetery is very poorly secured, irregularly patrolled, and unlit at night. As previously mentioned, we have been panhandled in the cemetery early in the morning, when there seems to be a great deal of pedestrian traffic passing through the area. The caregivers are exceedingly fortunate that, thus far, there has been little vandalism, no known theft, and no person-on-person crime. Steps should be taken to ensure the protection of both the cemetery and those legitimately using its facilities.

Most fundamentally, the cemetery must be locked at night. In a following section we will discuss some ordinances and how other municipalities have dealt with this issue, but generally other jurisdictions close their cemeteries from sundown to sunup or from reasonable hours such as from 6 PM through 8 PM.

This locking can be accomplished by the police or other city authority — but it must be consistently performed. With all but one entrance and exit locked (except for funerals), this is a minor task which should cause no serious hardship. In particular, we urge that all locks at the cemetery be keyed alike and that multiple keys be provided — with key control.

Almost as importantly, the cemetery should be far more routinely, and effectively, patrolled by the City Police. After this issue was raised during our assessment, we noticed that the police began to tour through the cemetery, but each time it was around 9:30 AM. *Routine patrols* should not be mistaken for consistency in timing. What this means is that there should be a consistent police presence. Patrols should go through the cemetery several times a day, at different hours. And each patrol should be slow enough, and detailed enough, to ensure that there are no problems — no recent damage, no appearance of theft, no suspicious individuals, no vagrants, etc.

Police patrols at night should visit all sides of the cemetery, looking for cars parked where they should not be, close to the entrances, suspicious individuals at the cemetery gates, or individuals actually inside the cemetery.

We recommend that the caregivers provide a tour of the cemetery to the Thomaston Police Department. Special attention should be paid to monuments which are currently damaged (so the police won't mistakenly identify old damage as recent vandalism), to areas which are difficult to see (such as the dead end of the western-most north-south road), and to items of particular value which may be targets of theft (such as the fence gates).

The cemetery boundary fence is generally adequate, although poorly maintained. There are several areas where the fence has been damaged and never repaired. **This fence should be carefully inspected by the caregivers and repairs made as necessary.** Along the southeastern edge the chainlink fence was never installed and the only fence present is an old wire fence on wood posts. **We recommend that the chain link fence be continued through this section.** Likewise, there is no fence separating the cemetery from the Robert E. Lee Institute property. **This area should also be fenced.**

Far less secure is the fence along Hightower, at the north front of the cemetery. This area is protected only by a low decorative fence associated with the formal entrance gates. **This is an area which might benefit from security lighting.** There is one street lamp at the northwest corner of South Hightower, which only provides illumination to the immediate street area. **We recommend that this pole be used for mounting directional lighting shining on the entranceway to the cemetery.**

Use of the existing pole will not only reduce the cost, but will also prevent the entrance from looking cluttered or losing its historic appearance. This type of directional lighting is also more pleasing than direct, in cemetery lighting.

Additional security measures may ultimately become necessary and those recommended here should be considered the minimum appropriate for a cemetery of this size and historic significance. If there are

documented problems, then additional steps should be implemented in consultation with the Thomaston Police Department and/or the Georgia Bureau of Investigation.

Lawns

Glenwood exhibits, in some areas, a fairly well developed centipede lawn. Centipede is a robust, low maintenance grass that is fairly drought tolerant and which does well in low fertility settings.

Elsewhere the turf consists primarily of weeds and a lawn-like appearance is achieved only by frequent mowings that keep the "grass" at one height.

One of the most significant costs in any cemetery management program is mowing the grass (discussed in the following maintenance section). **It would be wise for the caregivers to consider reseeding Glenwood with a grass that is more appropriate to a cemetery setting.**

An "ideal" grass is one that is drought resistant, requires little care or mowing and is adaptable to both shade and direct sun. Of course, this ideal does not exist and all grasses have both strong and weak points. Nevertheless, any lawn grass is "better" than a mix of weeds since it will be more even in appearance and need less frequent cutting.

While some grasses, such as zoysia, are hardy and slow growing, they are typically planted vegetatively — a costly undertaking for a cemetery the size of Glenwood. **Consequently, the caregivers may consider reseeding open, weedy areas of the cemetery with centipede. With adequate care and prior preparation, the centipede will eventually replace the weeds and provide a more uniform grass which requires less maintenance.**

In some sections of the cemetery the grass is very thin, not due to shade or any obvious disturbance, but most likely because of compaction, infertility, and poor preparation (Figure 27). In these areas the caregivers should also overseed with a seed, such as centipede, after appropriate soil preparation.

It is unlikely that any grass will be grown under the dense foliage of some trees (discussed below). **In such areas the cemetery may chose to landscape with a groundcover.** The ideal will be historically appropriate, drought tolerant, will remain close to the ground and not "mound up," will be able to grade from sunny to shady locations, and will be suitable for the climate and soil of the cemetery. An ideal will also be one which can be removed — either manually or using herbicides — should the necessity arise.

Like grass, there are many choices but no single, ideal plant. The caregivers may consider English ivy (*Hedera helix*) or periwinkle (*Vinca minor*). Either

Figure 27. Area of thin, poorly developed grass.

would, with time, present an acceptable ground cover in shady areas which is historically appropriate.

While not as historically appropriate, another plant to be considered is lilyturf (*Liriope muscari* or L. *spicatai*). This plant grows 12 to 24 inches high and exhibits an equal spread. It is evergreen with variegated leaves and lilac or white flowers. It is particularly effective moving from areas of full sun to full shade, exhibiting wide tolerances. It is also tolerant of heat, humidity, and drought. In addition, it is remarkable free of ailments and pests.

Other Plantings and Trees

We are surprised that the cemetery exhibits so few plantings. Their rarity leaves the cemetery with a somewhat stark appearance — which is only magnified by the dearth of trees.

While other plants may be apparent during other seasons, the only plantings we observed are nandina (*Nandina domestica*), yucca (*Yucca* spp.), elaeagnus (*Elaeagnus pungens*), and iris (*Iris* spp.).

Most fundamentally, since all of these existing plantings are likely original to the cemetery and the various family plots, special care should be exercised to ensure that they are not removed or damaged by maintenance activities.

The cemetery appearance could be dramatically improved through judicious plantings. Again the focus should be on plants which are historically appropriate and hardy. A range of possible plants might include daylillies (*Hemerocallis* spp.), coneflower (*Echinacea* spp.), coreopsis (*Coreopsis* spp.), lantana (*Lantana* spp.), butterfly bush (*Buddleia* spp.), verbena (*Verbena* spp.), and angel's trumpet (*Datura* spp.).

Areas of plantings would include within cradle graves (where English ivy is a very traditional planting), along walkways, and fencelines (where the height of angel's trumpet would be appropriate for screening). Daylillies could be used to accent plot fences or to highlight plots without copings.

Caregivers must resist the inclination to convert the cemetery into a horticultural park. Nothing should be done that detracts from the site's function as a cemetery. Nevertheless, some careful plantings could dramatically improve an otherwise barren landscape which is currently dominated by hardscape and grass.

The cemetery likewise has few trees. Those identified during this survey include several cedars, oaks, a magnolia, a pecan, and a honey locust. As near as we can determine there is no tree plan — nothing which specifies appropriate and inappropriate trees, nothing which outlines how trees are to be replaced when they are diseased or die. This is a significant failing and should be remedied.

In general trees may be defined as either "good" or "bad." The "bad" trees have a variety of undesirable traits, including vigorous and unsightly sucker growth, droppings of sap, surface roots, and leaves which create dense shade. The "good" trees are those that lack suckers, have little or no sap drippings, have a deep (not shallow) root system, and that produce limited, small leaves and allow light to filter through to the grass.

This distinction does not mean that the "bad" trees should be removed. But, what it does mean is that as trees die or have to be removed for other reasons, they should be replaced with tree species appropriate to the cemetery which have "good" traits. New trees should be carefully located to keep them away from monuments and stones.

In general we recommend that the number of trees be maintained — that there should be no additions or removals (except as replacements) to the historic core already present. In the case of Glenwood, however, the landscape, especially in the southern two-thirds of the cemetery is stark. Consequently, **we do recommend the planting of additional trees to break up this landscape and help focus attention away from the hardscape (most especially the very unattractive road system).**

We have been told that trees have been periodically removed, apparently because some official or another didn't "like" them. It is entirely unacceptable to

alter the historic landscape on the basis of whim. Trees should not be removed unless they are diseased or present a clear and present danger to either the public or a monument.

A common question concerns what to do if a tree is in conflict with a monument or fence. Should the tree be removed or should the stone or fence be relocated? There is no one single answer.

The determination should be made by evaluating the historic significance of both vegetation and markers, the degree of intrusion of one upon the other, the degree of difficulty, and the degree of potential damage that may be done in altering either.

There are two problem trees which immediately come to mind at Glenwood. Both are cedars and are relatively large (and therefore must be considered historic, although they likely grew up as scrub). One is situated entirely within the fence of plot II-41. In this case it does not appear that the tree has yet grown into or damaged the fence. One solution would be to move the entire fenced plot away from the tree by a foot or so. Another solution might include removing the back section of the ironwork and placing it in storage to be reset should be tree die. We would not, however, recommend the removal of this particular tree, which is otherwise healthy.

Figure 28. Cedar which is beginning to grow into the fence on plot II-41.

The other plot is II-34 and here the cedar has grown into the fence. Again there are multiple options. Perhaps the best is phased removal. Since the trunk is bifurcated, it should be possible to remove only the portion of the tree outside the plot, hoping that the portion within the plot does minimal damage to the fence. This would allow sufficient time to plant a replacement tree nearby, allow it to become established, and then remove the remainder of the cedar within the plot.

MAINTENANCE ISSUES

Current Maintenance Agreement

Currently the City of Thomaston contracts out various maintenance activities at Glenwood (as well as the City's other two cemeteries). The multi-year agreement, with Wilson's Lawn Care and Landscaping, will terminate on December 31, 2001. **Consequently, the City should be developing a new scope of work and these discussions should be used to help guide that effort.** First, however, it will useful to examine the current agreement, what work is to be performed under the agreement, and how the quality of that work was to be evaluated.

The current agreement specifies that the engaged firm perform nine specific tasks, itemized below:

- "keep the grass . . . neatly cut and trimmed and the shrubbery . . . properly trimmed and pruned so that at all times the same will present a neat appearance."

- "apply sufficient herbicide, to areas within three inches around all monuments, copings and markers to prevent the growth of grass or other plants, and apply herbicides to such other areas . . . and at such times, as shall be designated and decided by the City Street Superintendent."

- "keep and maintain the grass in a healthy state."

- "keep the cemeteries free of trash and other debris and remove, at least every Friday, any discarded flowers, memorials or decorations which have been removed from the grave sites and placed on or near the edge of the streets."

- "cut or remove any trees or shrubs pursuant to directions of the City Street Superintendent, and report to said Superintendent any damage to graves or other property . . . or any unusual occurrences or conditions therein."

- "avoid any damage to any property within the cemeteries, specifically including, but not limited to, monuments, headstones, markers, copings, footings and plants. Any damage to any property in the cemeteries caused by Contractor shall be restored to its original condition at Contractor's expense."

- "trim all hedges . . . once during the month of July."

- "cut and clear trimmings of all grass and weeds growing inside the copings at each grave sufficiently often to maintain a neat appearance."

- "apply fire ant pesticide each week so long as there is any evidence of infestation."

The cost of this work, for all three of the City's cemeteries was $22,300 when the contract commenced on January 1, 1998. Converted to year 2000 dollars, that cost would be $23,375. We do not believe that the scope of work required by the town could, in fact, be accomplished with this level of funding. These discussions, providing an overview of the care found during this assessment, document that significant portions of the City's scope have not been followed in any substantive fashion.

Staffing and Training

There is currently no minimal qualifications either concerning the level of staffing appropriate for the care of Glenwood or the training which that staff is expected to have. As the service is contracted out, this is at least partially understandable. The City likely anticipates that the contractor will have both the staff and knowledge to undertake the work. This, however, is not a wise approach for the City to take. **Cemeteries require a different level of care — and training — than the care of a suburban lawn.**

As a general rule we have found that about two staff, plus a foreman, are needed for full-time care for

every 10 acres. In other words, there is usually enough preservation and landscaping work to keep a crew of three busy year-round. **When services are contracted out, it should be expected that the crew size will be sufficient to perform, minimally, the work outlined by the scope.**

We recommend that the crew used at Glenwood remain stable and that the City require a training program. This should, minimally, include a lecture on the appropriate use of mowers, as well as how to correctly use nylon weed trimmers around monuments. This would cover explaining how damage can occur and the steps necessary to prevent damage; why it is critical that chemicals not be applied to stones; how to spot vandalism, and how to correctly work in the cemetery. **If the crew does not remain stable during the life of the contract, the contractor should re-educate new crews, without cost to the City.**

Lawn Care

Mowing Techniques and Scheduling

We strongly recommend against the use of any type of riding mower or commercial walk behind mowers for the work at Glenwood. Riding mowers cannot be sufficiently controlled to prevent damage and too easily allow significant deterioration of the markers. The commercial walk behind mowers, many with mowing heads providing up to 48-inch cuts, are likewise difficult to control. There is currently abundant evidence of mower damage at Glenwood, ranging from nicks and scrapes to edge grinding of partially sunken stones. Whether this damage has occurred during the current contract cannot be determined. Regardless, the **City should specify that only small commercial hand mowers may be used and these must never be brought closer than 18 to 24 inches of markers or copings.**

We also recommend that all mowers be padded. Firms may use closed cell pipe insulation on the exterior of the metal cutting heads to provide protection to stones and copings. This padding should be renewed each time that the cemetery needs mowing.

The current agreement specifies that the mowing should be sufficiently often "so that at all times the same will present a neat appearance." **While local conditions may vary, in general we recommend that during the active growing season, from May 1 through about June 15, grass should be cut at least once a week. From mid-June through mid-August, the grass should be cut every two weeks. Then, from mid-August through the end of the growing season the grass should again be cut weekly.**

The adjustment of the grass cutting blades should be appropriately set. **For centipede grass the normal recommendation is a height of about 1 to 1½ inches.** It is also critical that the blades be sharp.

Nylon String Trimmers

Trimmers are typically used to cut the grass which is too close to monuments or coping to allow safe power mower use. As previously mentioned, mowers should never be used closer than about 2 feet to markers. This grass, instead, should be cut with a nylon string trimmer.

There is a regrettable tendency to use thick lines, not because they cut thicker vegetation (they usually don't), but rather because they cut faster and are more durable. The problem with this approach is that the thick lines can also cause extensive damage to monuments, most especially sugaring or otherwise deteriorated marble.

Commercial trimmers may often use line as heavy as 0.135 inch and at Glenwood the line being used is 0.105 inch in diameter (based on multiple discarded samples recovered from the lawn area).

We recommend the use of line no thicker than 0.08 inch. While even this line can damage markers, it will certainly cause less damage than the line currently being used at Glenwood.

We have also noticed that string trimmers have been used at Glenwood in areas where the use is entirely inappropriate. For example, trimmers have been use in an effort to control grass growing between cracks of ledgers or other stones. All such efforts do is damage the stone. The grass is not effectively removed and the

Figure 29. Example of grass growing between breaks in a ledger. Rather than using a trimmer to "cut back" the grass, the stone needs to be repaired and reset, preventing grass from taking hold in the open cracks.

root system continues to grow — ultimately causing extensive damage. **The appropriate response is to remove the weeds and grass growing between such cracks and breaks, and then repair the stone** (Figure 29).

Chemicals and Fertilizers

One of the most often used chemicals in a cemetery setting is an herbicide. A grass herbicide is often used around copings and stones, while a broad spectrum woody brush herbicide is often used on fencelines and to control scrub growth. The problem with both is that many herbicides includes salts. For example, one of the most common weed herbicides is Monsanto's Roundup™. The active ingredient is glyphosate, typically glyphosate isopropylamine salt or glyphosate trimethylsulfonium (trimesium) salt. When absorbed into stone the salts crystallize and can cause significant deterioration through spalling.

Herbicides may have a place in some cemetery maintenance activities — but only if care is exercised in their application. The use of mowers and string trimmers should eliminate the use of herbicides around most monuments and copings.

Herbicides may need to be used in gravel plots where weeds have managed to penetrate the weed block (either polyethylene or concrete) and the gravel is not adequately deep to deter growth. While it can be applied using a very coarse spray (or for even better control a sprinkler can may be used), the weeds, once dead, still need to be removed to prevent unsightly dead vegetation (Figure 30). In addition, many herbicides, such as Roundup™, have no or a very limited residual effect in the soil. Consequently, the current growth of weeds is eliminated, but they will be replaced by new growth.

In general, broad spectrum brush herbicides should be avoided since they can cause extensive damage to non-target species. They are, however, appropriate, to eliminate scrub vegetation with suckers that is growing along fences and in plots. Even when cut many of these plants will quickly return as suckers from the surviving roots or stem (Figure 31). **In these cases we recommend painting the cut stem with a woody brush herbicide (spraying should not be conducted).**

The selection of an herbicide should be based on very careful evaluation:

- is it effective against the target species?

Figure 30. Example of grass killed with an herbicide in a plot. While dead, the grass is still an aesthetic problem and needs to by manually removed.

The cemetery caregivers should ban the use of all herbicides in the cemetery by the general public. The contractor should be required to document the decision to use herbicides (using the criteria listed above) and should be required to document where they are used, why they are used, and the exact material being used.

There are many places in Glenwood where inadequate efforts have been used to prevent or control woody brush. Figure 32 provides one such example. In this case indiscriminate

- is it the least toxic to humans and other non-target organisms such as desirable vegetation, animals, and beneficial insects?

- is it one that requires a surfactant? If so, is the surfactant safe to use in areas with sensitive organisms such as salamanders and other amphibians?

- is it least likely to leach into the ground or surface water?

- is it compatible with vegetation and revegetation programs?

- is it compatible with other management activities at the cemetery?

- is it low in volatility so drift is minimized?

- is it quickly degraded in the soil?

Figure 31. Scrub tree between ledger and die on base which needs to be cut and then brushed with a woody brush herbicide to prevent suckers from returning.

Figure 32. Graves I-146 & 147 in an overgrown and abandoned condition.

use of an herbicide would be disastrous — killing not only the invading scrub, but also the original plantings of yucca and elaeagnus. **We recommend in such cases that the scrub vegetation be removed and the remaining stem be painted with a woody brush herbicide.** Figure 33 clearly reveals how this little bit of effort greatly improves the appearance of the cemetery. In the case of this plot the work took only 0.25 person hour — *a minimal investment in the care and maintenance of this historic and beautiful cemetery.*

In addition to herbicides, it will often be necessary to use fertilizers in a cemetery. Even centipede grass, which performs well on poor soils, requires occasional fertilization. Generally the recommended level is about 5 pounds of 12-4-8 per 1,000 square feet in early spring, with an additional application in early August.

At Glenwood we conducted soil tests in two different areas. In the northern area of the historic cemetery we found a soil pH of 5.6, with very low levels of phosphorus (4 lbs./acre) and low levels of potassium (51 lbs./acre). In the southern area of the historic cemetery, near the Confederate graves, we found a soil pH of 6.3. Again, the phosphorus level was very low (7 lbs./acre), although the potassium level in this area was high (177 lbs./acre). Nitrogen was not tested since the levels of available nitrogen are variable due to its

Figure 33. Graves I-146 & 147 after only 0.25 person hour of work. After cutting out scrub vegetation the stems should be painted with a brush herbicide to prevent suckers from returning. The original plantings should always be carefully protected.

Figure 34. Fire ant mound on the exterior of coping (I-42). Recommended treatment combines a bait such as Amdro, followed in about 6 months by a dursban drench.

mobility in the soil. Since the available forms of nitrogen are water soluble, they move rapidly through the soil profile with rainfall and irrigation. Recommendations are typically based on plant needs, not what might be present in the soil at any particular time.

Based on this analysis of two areas within the historic core, we recommend that the cemetery receive a 10-10-10 fertilizer at the rate of 5 lbs./1,000 square feet). At the present time no lime is needed and the soil pH is within the acceptable zone for centipede. We have passed the initial spring growth period, but an application can be made in midsummer, assuming the grass is not drought stressed.

While the fertilizer should be applied using a mechanical spreader, **it is critical that the fertilizer not be applied to, or left standing on, stones or coping.** This will require that while one person spreads the fertilizer another sweep off stones and coping. Fertilizers, like herbicides, may contain salts which are detrimental to the preservation of the stone.

The last chemical application which is of special concern at Glenwood is the use of a pesticide to control fire ants. This is a critical issue: fire ants result in a deterioration of the landscape; they can cause tilting, sinking, and toppling of monuments; and they pose a significant health threat to cemetery visitors.

Recent studies have demonstrated that while 80% of the fire ant stings result in localized clinical reactions, 15% result in exaggerated reactions and nearly 2% result in anaphylactic shock, which is life-threatening. As a result, the control of fire ants at Glenwood is a significant liability issue and should be pursued aggressively.

It is not unusual to have 40 to 80 mounds per acre with a stable colony and one queen. This is apparently the case at Glenwood and mounds range from several inches to several feet in height (Figure 34). When examined on a per acre basis, studies reveal that the control of fire ants requires a modest investment of about $25/acre/year.

One of the most effective pesticides is hydramethylnon (brand name Amdro™). Used at a rate of 1½ lbs/acre we typically see a 64-100% reduction in fire ant mounds in four weeks, with a reinfestation within 6 months. Best control practices require yearly use of hydramethylnon, followed 6 months later by a dursban drench (using at least 2 gallons of appropriately diluted pesticide per mound). An alternative to dursban where water is not readily available is the use of Orthene™, applied at the rate of 2 teaspoons on top of each mound.

It is important to understand that

Figure 35. Example of abundant, tall weeds in a gravel plot. Some have already gone to seed, spreading the problem to other plots.

hydramethylnon is a bait and that it often takes about a week before an effect is noticeable. In addition, baits break down very quickly, so they should be applied only when the fire ants are actively foraging. In this area, the bait should be used only between April 15 and October 15.

Another control technique which can work with fire ants is the frequent mowing, raking, and disturbance of mounds. This practice will drive the fire ants to other locations, off the cemetery property. Given possible liability, however, we recommend a motivated and well organized baiting and pest control program which complies with all label directions.

Plot Care

Plot care is actually just an extension of the previous lawn care discussions. Many of the gravel plots at Glenwood are poorly maintained — weeds are abundant and, in some cases, nearly as high as the monuments. Figures 35 and 36 show these conditions in several areas of the cemetery.

As previously discussed, while weed control can be achieved by use of an herbicide, the practice will leave dead vegetation. In addition, some weeds, such as goosefoot, are increasingly resistant to

Figure 36. The weeds in this plot have become so dense that it is difficult to see the original gravel. In such cases extensive rehabilitation of the plots is necessary. The weeds must be killed and removed, then a weed barrier needs to be installed, followed by additional gravel.

many herbicides. If an herbicide is to be used, we recommend a drench adequate to cover the weeds and ensure a complete kill. At a minimum, after the weeds are dead they should be manually removed and additional gravel should be used in plots to make further weed growth more difficult. A better approach would be to rake back the gravel and install a weed barrier and then respread the gravel.

Simply using a string trimmer to cut down the weeds is unacceptable. This practice encourages abundant root growth and makes control far more difficult. In addition, it provides visual control for only very short periods — this requires that the plots be trimmed even more frequently, thereby increasing costs.

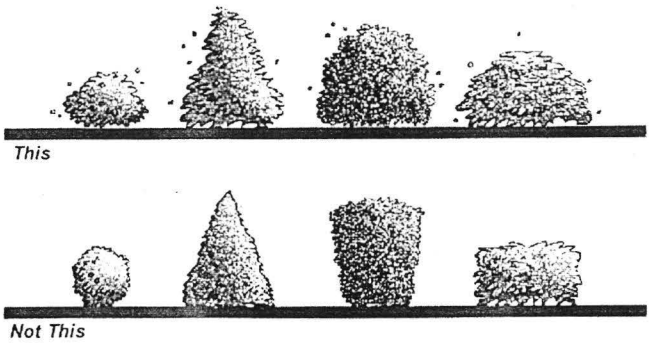

Figure 37. Examples of improper and proper shrub pruning.

Tree and Shrub Care

Pruning

Pruning is the selective removal of foliage or branches from plants. Pruning may contribute to the quality, attractiveness, and longevity of the trees and shrubs, but even more importantly appropriate pruning should help ensure the safety and security of the monuments in the cemetery.

Pruning should be done to remove dead or diseased branches, reduce foliage density or crossing branches, or to improve the beauty of the plant through *selective* removal of a *few* branches. Proper pruning is not difficult — there is abundant information available on the correct way to prune. Ample training or instructional courses are available and should be required prior to participating on a pruning crew. **We strongly recommend that evidence of this training be a requirement of the City's landscaping contract.**

Overpruning of shrubs is common — most shrubs which receive regular pruning probably don't need any pruning at all. When they are pruned improperly or unnecessarily, the labor and associated costs are wasted, the plant suffers, and the aesthetic quality of the landscape declines.

Shrubs have distinct shapes: weeping, rounded, oval, upright, and irregular. They should be allowed to take on their natural shape, and be pruned only to reduce crowded foliage, crossed branches, an asymmetrical shape, or branches growing out of the heart of the shrub. Artificial shaping of shrubs should be avoided. Shrub pruning should result in soft, natural shapes and be performed a maximum of once or twice a year.

There are relatively few shrubs in the cemetery which require any attention. The yucca should have the flower stalk removed when dead, although the nandina requires more careful pruning. It is best to thin out old stems every year or head back old canes at varying lengths to produce a dense plant. Neglected nandina, characteristic of Glenwood, can be renewed by removing a third of the oldest canes in the spring of each year for three years.

Pruning trees is both an art and a science. Proper pruning is absolutely critical not only for the health of the tree, but also for the safety of the monuments in the cemetery. Pruning may be necessary to control growth, remove deadwood, improve vigor, and/or maintain safety. Regardless, the pruning technique must be correct.

Deadwooding removes dead branches to eliminate hazards and reduce material available to destructive pests and diseases. Crown thinning involves the selective removal of branches to increase light penetration, improve air circulation, reduce weight, and lessen wind resistance. Crown lifting raises the lower

Figure 38. Example of a tree at Glenwood with much deadwood which has never been properly pruned out. This tree requires immediate professional attention.

level of the canopy to provide clearance for stones and pedestrians. Crown reduction, not often used in a cemetery setting, is the pruning back of leading and lateral stems to reduce height and maintain prescribed dimensions while also maintaining the natural form.

Correct tree pruning is at least a two-person job. At a minimum the crew should involve a highly-trained and experienced person to guide the cutter from the ground. As in the case of shrub pruning, **the contractor should be required to show evidence of appropriate training**. Alternatively, we recommend that the cemetery caregivers retain a professional tree company to prune all of the trees in the cemetery at least once a year.

Fertilizing

A good guide for fertilizing is *Standard for Fertilizing Shade & Ornamental Trees*, produced by the National Arborist Association. As with grass fertilization this standard recommends soil tests every two to three years, with foliar analysis conducted for those trees exhibiting specific nutrient deficiencies or other diseases.

For established plantings, such as those at Glenwood, fertilizers with a N-P-K ratio of about 3-1-2 or 3-1-1 are recommended (for example a common tree fertilizer is 18-5-11). Given the low potassium levels in some cemetery areas, the former ratio is likely a better choice, at least in the near term. Appropriate levels may be determined either on a square foot basis (typically 3 lbs of actual nitrogen per 1,000 square feet of area under the branch spread of the tree) or on the basis of the diameter breast high (dbh, calculated at ¼ lb actual nitrogen per inch dbh for trees under 6 inches and ½ lb of actual nitrogen per inch dbh for most trees over 6 inches dbh).

Autumn is often an ideal time for the application of fertilizer, while applications should generally not be made in the winter. Fertilization, especially with high nitrogen compounds, should be avoided in the late fall, when it might promote lush

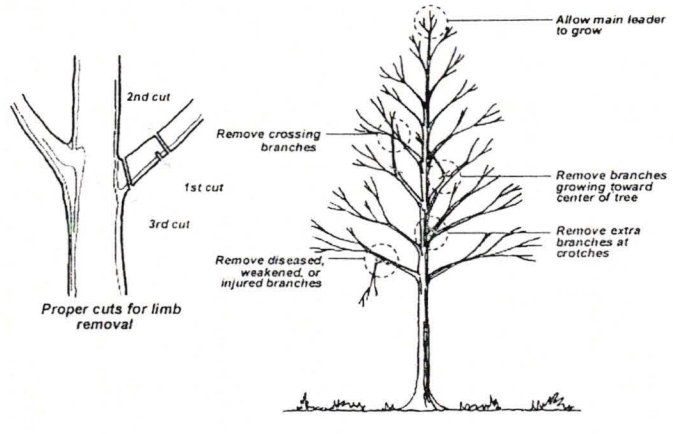

Figure 39. Appropriate tree pruning techniques.

growth which would not be able to harden off prior to winter freezes.

Given the inattention to the trees at Glenwood, we strongly recommend that the caregivers consult with a certified arborist not only concerning pruning, but also about the advisability of fertilization.

Removal

As previously discussed, trees have been inappropriately removed from Glenwood and this practice should cease immediately. With the few exceptions previously mentioned, the remaining trees should be considered historic and exceptional care should be provided to ensure their survival.

There may, however, be exceptional circumstances which require the removal of a tree. Examples might include untreatable disease, disastrous lightening strike, or imminent threat to a monument. **When a tree *must* be removed, it should be removed only by a professional firm specializing in difficult tree removals.** Every possible protection should be provided to adjacent monuments. Obviously, the tree should be removed in easy to maneuver sections. It may also be necessary to construct cribbing using railroad ties around monuments in order to ensure their protection.

Once removed, tree stumps should be cut flush with ground surface. No effort should be made to either grind the stump (this can cause damage to surrounding monuments, either from the equipment or the debris) or to grub it out (this can not only cause damage to surrounding monuments, but can also damage graves and expose human remains). Depending on the species, it may be necessary to use a woody brush killer, painted on the stump, to discourage suckers. However, no other chemicals should be used to encourage the rot of the stump since these may affect surrounding stones. Through time the root will gradually rot out — caregivers should be prepared to periodically fill up the decomposing root hole using clean sand (this will help mark the stump hole should some form of archaeological work ever be necessary).

Trash Removal

The system of stacking debris at the roadside for pickup is antiquated, ineffective, and creates an eyesore. As previously discussed, there are no trash receptacles at Glenwood — these are needed and should be a priority.

It is likely that trash pick-up will be required on at least a weekly basis. Additional, non-regular pick-up should be scheduled about a week after any burial to remove the flowers and associated stands.

Roadway Maintenance

As previously discussed, the roads at Glenwood have been recently repaved, although grass is again growing through the new asphalt and potholes are already present.

Asphalt roadways may require repair of cracks, rejuvenation by spray sealing, or even replacement. **We recommend that the caregivers consult with a civil engineer to determine the condition of the current roads and the best approach to deal with the seemingly rapid deterioration of the newly paved roadways.**

Evaluation of the Current Landscaping Agreement

While the current agreement includes a number of critically important issues, it is poorly written — failing to provide adequate definitions and specifications — and very poorly monitored. **We recommend, first, that the current contract, in so far as possible, be enforced for the remainder of its term and second, that the City of Thomaston, revise the scope to provide for better and more consistent care of Glenwood Cemetery. We also recommend that the agreement be far better monitored.**

For example, rather than specifying only that the grass be "neatly cut and trimmed," a phrase which has no real meaning, **the scope should specify a minimum cutting frequency.** In terms of shrubs, additional specifications should be added indicating a

Figure 40. Abundant overhanging trees and vegetation along the fence line. These areas, which exhibit no previous landscaping efforts, need to be cleaned up immediately.

minimal number of times a year they are trimmed, as well as specifications concerning their appearance.

It is likewise clear from the extensive growths in many of the plots that there has been no effort made to apply herbicides to the plots. In fact, during this assessment we observed a family member spraying a plot. **This specification should be clearly rewritten to specify a minimum number of applications, when they should occur, the herbicide(s) to be used, and most importantly, how the chemical should be applied.**

It is also insufficient to state that the grass should be kept in a healthy state. The abundance of weeds, coupled with the two soil samples, clearly reveal that the grass is, at present, not in a healthy state. Again, **it is important that some minimal specifications for "grass health" be stated. These should involve not only requirements for soil testing, but also some minimal fertilization requirements.**

Figure 41. Thick undergrowth, often containing poison oak and other noxious weeds, along the cemetery fence lines. These require immediately manual removal, with herbicide applied to the stems for long-term control.

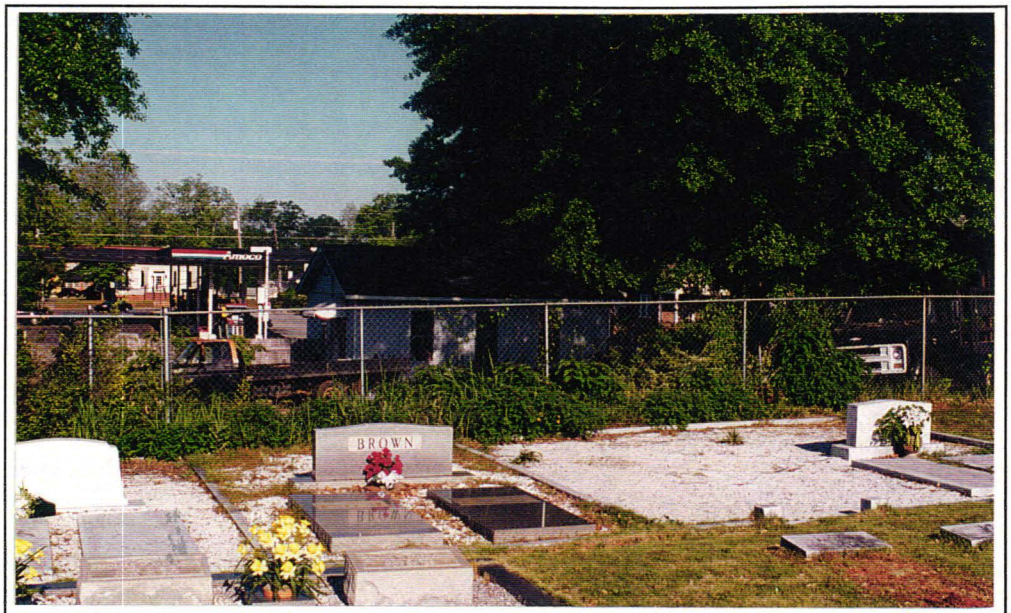

Figure 42. Area of the cemetery fence where the absence of screening vegetation creates an undesirable view of nearby commercial businesses. An appropriate, fast-growing screen is required for these areas.

During this assessment we stacked a number of piles along the roads in the cemetery. By Friday at 2:00 PM the contractor had not visited the cemetery and none of the piles had been removed. **Given the quantity of debris in the cemetery — immediately after grass mowing — it appears that trash is irregularly collected. In this case the specifications are clear enough. The City, however, has failed to make any meaningful effort to enforce the specifications.**

We could not determine during this assessment whether the Street Superintendent has ever specified the removal of any trees or shrubs. **We understand, as previously discussed, that some have been removed at the direction of a city council member. This is entirely inappropriate and no additional removals should be conducted without clear and well documented need.**

In terms of both trash removal and also cutting and removal of shrubs, there are **very serious deficiencies in the care and maintenance of the surrounding fences**. In many areas there are heavy overhanging trees (Figure 40), and

Figure 43. Area of fence showing drastic and inappropriate pruning. A revegetation effort is needed (see also Figure 44).

Figure 44. Debris from the improper trimming (see Figure 43) have been piled on a grave. These debris, left for at least several months, need to be immediately removed. This sort of behavior cannot be tolerated and those responsible should be identified.

dense build-up of weedy shrubs, poison oak, and other noxious scrub (Figure 41). In other areas there has been **no effort to plant species which will provide cover and shield the cemetery from the commercial — and frequently discordant — views of adjacent property owners** (Figure 43).

In yet another case, it appears that several lot owners or other unidentified individuals took matters into their own hands, stripping the vegetation and conducting much incorrect pruning along the fence line. It will take considerable effort — and time — to appropriately revegetate this area. In addition — and even more egregious — these individuals stacked the cut debris on another plot, entirely covering a grave. This exhibits an extraordinary lack of respect. Not only did those doing the work not bother to remove the debris to a location where it might conveniently be picked up, but it seems that either the landscape contractor never reported the damage to the City or the City never sought to rectify the situation. **This is a deplorable situation and the pile has created a public health hazard, providing refuge for rodents and snakes. It must be cleaned up immediately and the City must take steps to notify those who did this that such action will not be tolerated in the future.**

We failed to identify any hedges in the cemetery. **It seems that an appropriate provision concerning the trimming of shrubs and the care of the fence lines would be adequate.**

There is no evidence that the current landscaper is cutting and clearing trimming inside plots. As previously discussed, many of these plots are heavily overgrown and small scrub trees are not uncommon. **There appears to have been no effort to monitor and enforce the contract.**

Likewise, **this assessment identified so many active fire ant nests that it is unlikely that any "fire ant pesticide" has been applied.** We failed to identify any residual bait, any odor of pesticide, or any reduction in the activity of various nests. In fact, many of the nests are very large, indicating their unrestrained growth over a period of perhaps several years. **This again not only reveals that the contractor has failed to perform to the standards established by the contract, but also that the City Street Superintendent has failed to adequately monitor, or enforce, the City's contract.** The contract should be rewritten to specify the exact treatments expected and their frequency.

While it is no defense for the lack of performance, **the sum provided by this agreement is unreasonably low.** We assume that the City has the ability to reject proposals which are bid so low that it is clear that performance is impossible. In the future, the City should look very carefully at rejecting low bids and

focusing, instead, on responsive bids that document the ability to perform the specified work to the level needed.

This document should be used to rewrite the scope of work in a manner than ensures better and more proactive care of the cemetery.

RECOMMENDED TREATMENTS

Introduction

In the **Introduction** to this study we outlined some of the treatment approaches, explaining many of the issues to be considered and generally describing appropriate treatments for a variety of materials. The purpose of this discussion is to more specifically outline the activities necessary at Glenwood. We will provide information on the number of objects requiring treatment at the time of this study, although for most we will not provide detailed treatment proposals. We will also provide a general idea of the costs involved for budgetary planning purposes, although it should be clearly understood that the costs may change as individual treatment plans are developed. This introduction will also provide some guidance on the kinds of treatments which volunteers may be able to perform with appropriate training and supervision.

Stone Treatments

Resetting

As shown in Table 1, there are 215 stones which require resetting or reattachment. Most of these are monuments with one or more sections loose or unattached. Some involve loose urns or other decorative objects. In these cases the generally appropriate response is to reset the loose elements using an appropriate 1:4:8 mortar mix (1 part of white Portland cement, 4 parts hydrated lime, and 8 parts clean graded sand). Where the loose elements are large and heavy, it may be appropriate to use lead or plastic wedges to prevent the weight of the monument from displacing the mortar mix. We consider these treatments to be a high priority. Not only are such stones (or objects) liable to damage themselves should they fall (and hence result in even greater repair costs), but they also may endanger the public. Loose stones are liable to topple should they be climbed on by small children or leaned on by adults.

While most resetting is not terribly complex, there are occasions where the various elements were originally held together using iron or brass dowels. When brass dowels are still in good condition they may be cleaned and reused. When iron dowels are present they are almost always in poor condition, exhibiting heavy corrosion. Often they have already corroded through, leaving the dowel embedded flush with the surface of the stone. In such cases it becomes critical to remove the dowel since leaving it will allow the corrosion to continue. As the iron corrodes it expands, and this will cause spalling and breakage of the stone. In such cases the only solution is to drill out the dowel. Often this requires a core drill to remove the dowel and some surrounding stone.

Also included in this category are stones which are significantly tilting. In such cases the appropriate response is to reset the stone. This is generally accomplished by excavating the soil away from the stone, straightening the stone, and backfilling. The process is more completely explained in Appendix 4. Again, this type of resetting is judged critical since the stones may break and may cause injury if they fall.

A final category of resetting that is common at Glenwood is the need to "restore" cradle graves which are often not only sunken to or below grade, but which

Table 1.
Stone Treatment Requirements

	Resetting Stones	Mechanical Repair
Section I	91	23
Section II	80	39
Section III	9	1
Section IV	9	3
Section V	7	2
Section VI	15	12
Section VII	4	2
Totals	215	82

have often fallen apart. Resetting these may involve excavation, or reattachment using existing pegs. A very few may require existing pegs to be drilled out and replaced. Once reassembled on a sound brick foundation, the cradle graves should require relatively little additional attention.

Resetting costs may range from $75 to $800 per stone, depending on the nature and current condition of the stone, its size, whether it requires other work. **A reasonable estimate for the 215 stones at Glenwood is about $25,790.**

Some, although not all, of this work may be accomplished by trained volunteers. For example, volunteers can reset virtually all of the tilted stones and can reattach approximately two-thirds of those which are loose. The remaining stones require some more specialized treatments. Nevertheless, a one or two day training class would cost less than $2,000. Coupled with about $800 of materials, volunteers could make a significant improvement in a large number of stones very quickly.

Mechanical Repair

There are 82 stones which require mechanical repair. Many of these are in very bad condition, exhibiting multiple breaks. The old repair approach of using a continuous bead of epoxy (or other adhesive) along the break is inappropriate. It provides a very weak joint which will soon fail, it provides no support to the stone, and when failure occurs the damage is almost always far worse than the original break. Many of these old repairs also exhibit exceedingly poor workmanship, with sloppy joints and the smearing or dripping of epoxy on the face of the stone.

The appropriate repair for these breaks is to drill multiple holes to allow the placement of stainless steel or nylon rod set in epoxy, used to tie the different pieces back together. For many of the stones the breaks are so numerous and the damage is so severe that after repair it will also be necessary to place the stones in a specially crafted cradle or support to hold them upright. While these can be crafted of wood and acrylic, a far more durable version uses "plastic" wood and stainless steel attachments.

Other mechanical repairs include the disassembly of several box tombs, establishing a new foundation, and resetting the ledger. When the ledger is intact the primary concern is ensure that it is level, with only a slight tilt to encourage water drainage and discourage erosion where acidic water collects. When the ledger is broken, it becomes necessary to drill and pin it like headstones, except that the process becomes more complex with every piece requiring leveling before the next can be added. It is often useful to infill box tombs with clean sand to provide a better platform for the ledger.

In general, mechanical repairs cost from $500 to $2,000 per stone, again depending on the complexity of the repair necessary. Supports add approximately $200 to $500 to these costs. **We estimate that approximately $72,500 will be necessary to effectively and appropriately repair the broken stones at Glenwood.** This should provide clear and dramatic proof of our warning that it is far less expensive to reset or protect a stone than to repair it after it has been damaged.

While this work is very expensive, we recommend that it receive a very high priority. There are some stones — for example a box tomb with a leaning ledger — which require immediate attention to prevent breakage and even greater repair costs. There are other stones which, if not soon repaired, will be so eroded and so damaged through landscape activities that repair will no longer be possible. Failure to aggressively pursue repairs is a decision to abandon these stones to total destruction. It is the moral equivalent of "demolition through neglect" and this is an unconscionable decision.

Coping Treatments

We identified 60 copings in dire need of repair and/or replacement (see Table 2). As previously illustrated in the **Introduction**, some concrete copings are so completely deteriorated that repair is not feasible. In such cases the only possible response is removal of the damaged coping, setting up forms, and laying new coping. It is important that the form work replicate as

Table 2.
Coping Treatments

	Number
Section I	9
Section II	22
Section III	2
Section IV	5
Section V	0
Section VI	20
Section VII	2
Totals	60

closely as possible the rounded top used throughout the cemetery. While it may be that the original forms still exist somewhere in the community, it is more likely that the concrete coping replacement will require replication of the formwork.

Type I concrete should be used for this work. Without the addition of the large quantity of clinkers to the mix as aggregate, we do not believe that sulfate attack will be a significant issue. The normal weight aggregate should comply with ASTM specification C33. Limiting aggregate size may assist in good finish work. Advice should be sought on this issue from the firm selected to perform this work. The minimum slump should be 1-inch and the maximum allowable slump should be 3-inches. Given the freeze-thaw cycles in this region, it may also be appropriate to use an air entraining mixture. The recommended air content mixture will depend on the size of the aggregate used. For example, when the maximum aggregate size is 1-inch the recommended air entrainment is 3% for mild exposure. This is increased to 4% when the aggregate is only ½-inch.

This work should be closely supervised to ensure that all deteriorated concrete is removed from the cemetery, that all concrete is appropriately tamped and cured, that all earth and sod is replaced, and that the cemetery is left is good condition.

The cost of replacing the concrete coping cannot be easily calculated. Not only are we uncertain if original form work can be identified, but there would be considerable savings by doing entire sections at one time, rather than piecemeal replacements. Finally, the cost will also depend on local wage rates. Regardless, it is likely that constructing forms will cost about $2/linear foot, with their placement costing about $8/linear foot. Each plot coping will consist of approximately 80 linear feet. Placing the ready-mix concrete and finishing the work will cost about $60/cubic yard, with each plot requiring approximately 2.2 cubic yards. To this should be added the local cost of the specified concrete.

In other cases the coping consists of marble or granite laid on prepared earth, CMU, brick, or concrete. In these cases the deterioration is primarily associated with the deterioration of the mortar and shifting of the coping. In very few cases did we encounter any pins used to ensure the placement of the coping.

Repairs of this coping can be conducted relatively easily by removing the displaced coping and manually removing all mortar from the coping and its foundation. The coping may then be reset using an appropriate 1:4:8 mortar mix (1 part of white Portland cement, 4 parts hydrated lime, and 8 parts clean graded sand). In the case of granite, the white Portland cement may be replaced with gray cement.

Landscaping Treatments

As shown in Table 3, there are 258 lots where there are vegetation problems, primarily abundant weeds growing in gravel plots or scrub trees growing around markers. There are also at least 75 fire ant mounds which require immediate treatment.

As discussed in **Maintenance Issues**, the use of herbicide is not an ideal solution for the control of

Table 3.
Landscaping Treatments

	Vegetation	Fire Ants
Section I	8	0
Section II	75	10
Section III	24	9
Section IV	41	22
Section V	3	0
Section VI	66	31
Section VII	41	3
Totals	258	75

Table 4.
Condition of Fences and Recommended Treatments

Fence #	Description	Treatments/Repairs
I-5	Champion Iron Fence Co.; 2 channel rails, round pickets with malleable finials; open cathedral top gate posts; gate and posts No. 125 (Miniature Catalog No. 12)	• moderate pitting; prepare and paint
I-30	UID manufacturer; 2 channel rails, milled point round pickets; column support posts set into granite coping	• minor pitting; prepare and paint
I-32	UID manufacturer (same as II-5 and II-42); 2 channel rails, milled point square pickets; step-fret below top rail between pickets; cast finials set on bottom rail between pickets	• moderate pitting; prepare and paint
I-34	UID manufacturer; 3 channel rails; alternating square and round pickets; base of round picket decorated with scroll; at top are star burst decorations; above, on round pickets, are pine cone motifs with scroll work; square pickets have milled points; lettering on gate damaged	• moderate pitting; prepare and paint
I-37	The Valley Fence, Knoxville, Tennessee; 2 channel rails; bow and picket design, 4" centers, malleable acorn finials, repeated on heavy gate posts	• minor pitting; prepare and paint • lower ground level to allow gate to function • install stainless steel closure device for gate • straighten bent sections
I-38	Champion Iron Fence Co., Kenton, Ohio; 3 channel rails; milled point short-long picket; gate Plate 43 (Miniature Catalog No. 12)	• moderate pitting; prepare and paint • straighten bent sections • straighten and reset leaning gate post
I-40	The Roger's Iron Co., Springfield, Ohio (Patented Nov. 22, 1881); 3 channel rails; short-long pickets with malleable finials; open cathedral top gate and corner posts	• moderate pitting; prepare and paint • reset gate • straighten gate posts
I-43	UID manufacturer; 2 channel rails; round picket with malleable finials; most of fence bottom pickets set in concrete coping	• moderate pitting; prepare and paint • straighten pickets • reattach east section
I-53	UID manufacturer; 2-1" square rods set into granite posts; rails unattached, bent	• minor pitting; prepare and paint • replace missing post; repair, if possible, broken post • reset rails

Table 4, cont.
Condition of Fences and Recommended Treatments

Fence #	Description	Treatments/Repairs
I-61	Champion Iron Fence Co.; 3 channel rails; short-long square pickets with malleable finials and scroll; Fence No. 122 (Miniature Catalog No. 12); open cathedral top gate and corner posts; gate Plate No. 43 (Miniature Catalog No. 12); portions of lower pickets buried in soil	• moderate pitting; prepare and paint • expose buried sections • reattach loose sections • reset gate • repair broken posts if parts are available
I-149	Champion Iron Fence Co., Kenton, Ohio; 3 channel rails; round pickets with malleable finials; rusticated attachments similar to Pat. 211,657; open cathedral top gate and corner posts	• minor pitting; prepare and paint • reset gate • reattach loose sections • reset post
I-151	UID manufacturer ; 3 channel rails; short-long milled point pickets; only two of the four sides are extant	• moderate pitting; prepare and paint • expose buried sections • attach to replacement posts • straighten bent sections and pickets • reattach loose sections
II-1	Stewart Iron Works, Lexington, Kentucky; 2 channel rails; Fence 51-A (Catalog 60-A); malleable picket top "L" (Catalog 60-A); S line posts; round pickets, 4" on center, Gate 2-A (Catalog 60-A) without cross-brace	• moderate pitting; prepare and paint
II-4	UID manufacturer; 2 channel rails; pickets missing; malleable fleur-de-lis on top rails, many missing; bottom rails bent; corner posts with urn motifs	• minor pitting; prepare and paint • straighten bottom rails
II-5	UID manufacturer (same as I-32 and II-42); 2 channel rails; square pickets 5" on center; step-fret below top rail between pickets; cast finial set on bottom rail between pickets	• moderate pitting; prepare and paint • broken ground anchor: shift support and weld
II-14	UID manufacturer; 3 channel rails; at top scrolls, below crossed pickets with rosettes; fancy fleur-de-lis; malleable finials; corner posts have acanthus leaves near base, urn with flame at top; set high out of ground; some design elements missing	• moderate pitting; prepare and paint • evaluate fence for resetting lower in ground

Table 4, cont.
Condition of Fences and Recommended Treatments

Fence #	Description	Treatments/Repairs
II-18	Same as II-4; some fragments of cast hairpin elements found on ground around fence	• moderate pitting; prepare and paint • straighten bent rails • collect fragments, weld elements, then tap and replace on rails using stainless steel bolts
II-25	UID manufacturer; 2 channel rails; forged point square pickets and mini-pickets between on bottom rail; gothic arch below top rail with small shield (most missing); malleable picket tops on support posts; set in granite	• minor pitting; prepare and paint
II-28	Champion Iron Fence Co., Kenton, Ohio; 3 channel rails; short-long square pickets spaced 4" on center; plain top pickets; Fence and Gate No. 125 (Miniature Catalog No. 12); square line and gate posts	• minor pitting; prepare and paint • some posts loose in brick coping; reset with lead
II-34	Champion Iron Fence Co., Kenton, Ohio; 3 channel rails; short-long square pickets spaced 4" on center; plain top pickets; Fence and Gate No. 125 (Miniature Catalog No. 12); open cathedral top gate and corner posts; some design elements missing	• moderate pitting; prepare and paint • attach and reset rails where necessary • reset leaning posts • reset brick coping where necessary • remove exterior branch of cedar
II-41	UID manufacturer; 2 channel rails; cast iron panels attached to round top and bottom rails; top is a fleur-de-lis pattern	• minor pitting; prepare and paint
II-42	UID manufacturer (same as I-32 and II-5); 3 channel rails; square pickets 5" on center; step fret below top rail between pickets; external knot and rosette at base between second and third rails; set on granite coping	• moderate pitting; prepare and paint • reset one support
II-49	UID manufacturer (possibly same as I-4 and I-18); 2 channel rails; malleable picket tops set on secondary top rail; cast iron panels, gothic design with quatrefoils and spires; many elements missing; gate off	• moderate pitting; prepare and paint • straighten posts • reattach channel rails • replace gate
II-50	UID manufacturer; 2 channel rails; panel sections attach to corner posts set in granite coping; most of the fence is down and badly damaged	• moderate pitting; prepare and paint • reattach were possible; weld available sections • reset corner post

Table 4, cont.
Condition of Fences and Recommended Treatments

Fence #	Description	Treatments/Repairs
II-78	UID manufacturer; 2 channel rails; bow and picket design; round pickets, malleable picket tops; white metal family name on gate; gate latch missing	• moderate pitting; prepare and paint • reset one support
II-82	Champion Iron Works, Kenton, Ohio; 2 channel rails (possibly a third buried in concrete coping added for stability); short-long square pickets; open cathedral top gate and corner posts; cross braced gate with scroll work above top channel rail	• minor pitting; prepare and paint • adjust gate to open
II-88	UID manufacturer; pipe railing fence with twisted picket wire; some wires corroded and failed	• minor to major pitting; prepare and paint • replace corroded and broken top tension wire • reattach fence to posts
II-94	UID manufacturer; low wire fence and trellis bedstead	• minor pitting; prepare and paint • straighten and where necessary support with stainless steel rods • secure with stainless steel connectors and/or wire • secure in ground using stainless steel anchors
III-19	American Fence and Iron Works Co., Cincinnati, Ohio; 2 channel rails; bow and picket design; fence is outwardly identical to the No. 20 fence shown in the Cincinnati Iron Fence Catalog No. 85; square gate and corner posts	• moderate pitting; prepare and paint • install bumper on gate to prevent additional damage to ledger in plot
V-5	UID manufacturer; fence is made up of multiple unmatched elements with much welding repair; gate posts mis-matched; two distinct fence sections used	• minor pitting, some corrosion at welds; prepare and paint • excavate to expose base of fence
V-8	Stewart Iron Works, Cincinnati, Ohio; 2 channel rails; bow and hairpin fence 9-A, gate 2-A, posts 16-B (Catalog 60-A); previously painted silver, base coat black, now badly flaking; much vehicular damage with bending of fence sections and gate	• minor pitting; prepare and paint • straighten sections • remove gate, straighten, replace • excavate to expose base at west side

either weeds or brush. In plots, the herbicide can not only damage the stone, but it also results in large masses of dead or dying vegetation which is disfiguring. The idea solution is the manual removal of the weeds and their roots, followed by an annual application of herbicide at the beginning of the growing season to retard any additional growth. This can also be accomplished by renewal of the gravel and the use of either concrete patch repair or weed block.

When the ideal is not possible, we recommend at the least that the weeds be removed to ground level. This can be accomplished by using a sharpened flat shovel to scrape up the weeds. Afterwards the weedy area should be treated with an herbicide applied as a drench from a watering can. The cost is estimated to range from $25 to $200 per plot, depending on the density of the weeds. Where additional gravel is needed, this charge should run about $20/50 pounds of limestone chips.

Dealing with scrub vegetation in plots is somewhat easier. The offending tree can be cut, as close to the ground as possible. Afterwards a brush killer can be painted on the cut stump. This will usually prevent suckers from returning from the root system. The cost of this treatment will likely average ca. $5 per instance.

There is also much vegetation along the western fence. In this area it is critical that a professional crew be brought in to appropriate trim back the trees, removing branches that hang over the fence and obscure the plots. Along many other fences, but most especially on the southeastern fence, there are abundant noxious plants, such as poison oak. These should receive spot treatments of brush herbicide.

Similarly, we have previously provided detailed instructions on the elimination of fire ants using phased application of Amdro™ and dursban. The treatment cost should not exceed $8 per mound. In the case of inactive mounds, the mounded soil should be removed to allow routine lawn care and restoration of grass in the mound area.

This is all work which can be quickly and easily conducted by volunteers. It is likely that the supplies and materials necessary to conduct the work can be obtained as donations from local businesses. Done correctly it has absolutely no affect on the original intent of the lot holders and in so-called perpetual care cemeteries is considered routine maintenance. In fact, much of this work is already covered by the City's contract for the care of Glenwood, although the work is being irregularly performed.

Fence Treatments

The **Introduction** briefly outlined acceptable conservation practices for the care and preservation of the cemetery's ironwork. Table 4 outlines the problems identified with each of the various fences in the cemetery (excluding the main entrance fence, discussed below) and the work which needs to be conducted.

Perhaps the single most beneficial undertaking would be the appropriate preparation and painting of the fences. Even several which have been recently painted were not well prepared and corrosion is breaking through in spots. As a result, it is critical that we emphasize the importance of adequate surface preparation. All surfaces should be free of any loose or flaking paint. They must be free of grease, oil, and thoroughly dry before applying any primer or rust converter.

Historically cemetery fences received a fairly thin coat of flat or very low gloss black paint, often over a red lead primer. One fence in Glenwood has had aluminum paint applied over what appears to be a black base coat. We recommend a consistent semi-gloss to flat black paint. Thick applications are not appropriate; they do not encourage longevity in the paint (in fact, the opposite is true — the thick paint tends to chip more easily) and it obscures the fine detail in much of the ironwork.

As previously discussed, there are a number of different products which may be appropriate for the fences. The simplest approach is to apply a protective coat of standard alkyd metal primer with a rust inhibitor such as zinc phosphate, zinc chromate, or zinc dust,[1]

[1] These pigments "sacrifice" themselves on behalf of steel to prevent rust. The zinc provides the

followed by two coats of a semi-gloss to flat alkyd paint.

As an alternative, the caregivers may wish to explore the use of a one-step rust converter. While there are many, one of the better known is Corroseal™ Rust Converter and Copolymer Metal Primer, produced by Corroseal (888/466-7878). This product converts rust on steel from iron oxide rust, to magnetite, Fe304, a black, inert substance. At the same time, it primes the metal for a final paint coat.

Another approach is the use of a volatile corrosion inhibitor (VCI). The exact nature of the bonding between the metal and the inhibitor is not precisely understood, but the simplest explanation is that the outer surfaces of metals are composed of a metal oxide. The VCI attaches itself to the oxides through weak chemical bonding and shields the metal from penetration by corrosion materials, such as water. Most VCIs, such as those produced by Cortec (800/426-7832), are proprietary compounds of mixed amine salts. There are a number of products which might be suitable and the caregivers may want to explore this product as an alternative to paint.

Primers, rust converters, and VCI products are typically top coated with a paint. We generally recommend using a high quality industrial coating designed for exterior application. Critical issues to be considered include ease of application, longevity, as well as ease of removal should the coating fail (for example, while epoxy paints are excellent, they can be difficult to remove should the need arise). As previously discussed, we recommend the use of an alkyd paint rather than an acrylic.

An issue which applies to virtually all of the fencing at Glenwood is the security of the gates. Steps should be taken immediately to secure these gates. Like most security issues, there is no one, simple solution that combines perfect security with convenience, ease,

Figure 45. Example of bent hasp on a pedestrian gate at Glenwood. Rather than appropriately fix the damage, the City has used swing chain to lock the gate. This is an example of inappropriate maintenance that degrades the beauty and dignity of the cemetery.

and aesthetics. For example, using logging chain and a high security padlock to secure gates would not only be unattractive, but even logging chain presents only a minor deterrent to a determined thief.

A far more reasonable approach is to use vinyl coated cable with ferrules and stops to secure the gates at their hinge edge to the gate post. Using three such devices will stop an opportunistic thief and will slow down one prepared with heavy duty wire cutters. At a minimum, ¼-inch cable coated to 5/16-inch should be used. Ideally clear vinyl coated stainless steel will be used, although galvanized can be used if necessary (the stainless steel lasts longer and is somewhat more difficult to cut). Regardless, vinyl coating is required to prevent damage to the fence. The ferrules and stops must be applied using a cripping tool — simple pliers or vise grips will not adequately secure these on coated wire. If additional security is desired, either 5/16 or 3/8-inch wire can be used (coated to 3/8 or 7/16-inch respectively) although these are more difficult to wrap and are clearly more obvious on the fences.

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steel with galvanic protection. A current of electricity flows from the zinc to the steel when moisture is present, corroding the zinc and leaving the steel intact. Most zinc coatings are solvent-borne.

Figure 46. Zinc monument at Glenwood (II-32k). Note the staining at the head.

If even greater security is desired, excellent devices are manufactured by Kryptonite Locks™. Their "Extra Large Padlock" (#830603) measures 11½ by 4-inches, while their "Adjustable Padlock" (#830634) adjusts from 3-inches to 11-inches.

Regardless of the device, it is critical that the caregivers take the immediate step to secure the gates. Glenwood is extremely fortunate to have so many well preserved fences. Every possible effort should be taken to ensure their well-being.

It will cost less than $300 to secure all of the gates using vinyl coated cable and volunteer labor. This is far less than the value of a single gate.

The main entrance fence is not in need of paint, but does need maintenance. The lifter bar for the main gate's ground pin is broken at the weld. The bar was found laying on the ground. As a result of this damage the intended padlock devise cannot be used. On the pedestrian gate hasps are also bent so that the gates will not properly close and cannot be locked.

In all three cases, rather than repair the vandalism, the City of Thomaston has simply used a lightweight swing chain to lock one of the two gates closed (the other has apparently never been secured). Not only is this approach aesthetically unappealing, but it evidences a lack of care that speaks volumes concerning the City's failure to maintain the cemetery

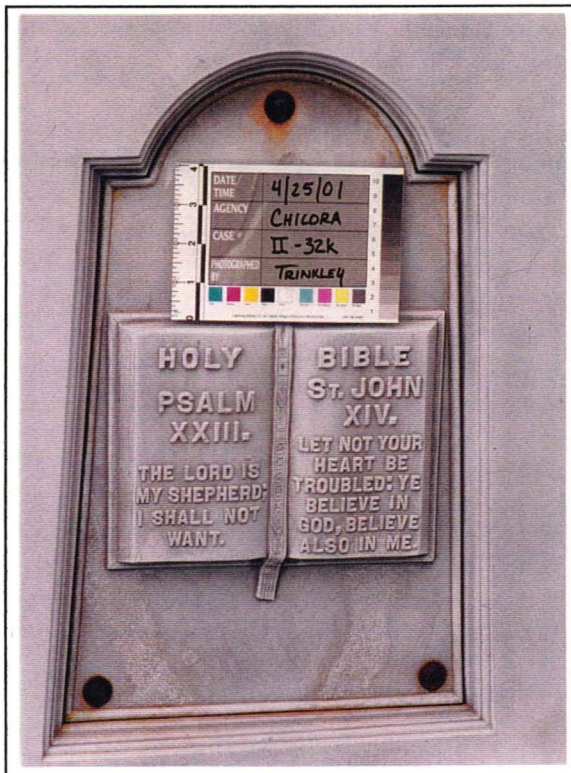


Figure 47. Inscription tablet held in place with corroding ferrous screws. These should be replaced with stainless steel screws.

Figure 48. Iron cross found in plot II-78. Steps should be taken to immediately secure this unusual grave marker.

(Figure 45).

The repair of these locking devices would take only a few hours of an employee's time and should receive the highest priority. **The cost of this work should not exceed $300.**

Other Metal

The most significant other metal feature in the cemetery is a zinc monument. These were manufactured by just one company, Monumental Bronze Company of Bridgeport, Connecticut.[2] These markers were produced from the mid-1870s to World War I and represent a unique part of cemetery history. Glenwood is fortunate to possess one of these markers and very special efforts should be exercised to assure its care and preservation.

The characteristic blue-gray color is a result of the nearly pure zinc forming an outer protective coating of zinc carbonate. Zinc is a relatively stable metal, although the example in Glenwood exhibits a dark stain at and around the head area (Figure 46). Only far more detailed analysis, possibly including chemical study, can determine the cause, and potential damage, of this staining. Of far greater immediate concern is that the removable tablets at the base have had their ornamented unslotted screws removed and replaced with ferrous screws that are now heavily corroding and staining the zinc (Figure 47). These should be carefully removed and replaced with stainless steel screws. **The cost of this work is estimated to be approximately $200.**

Another significant problem with the zinc markers is the metal's tendency to "creep" — the weight of the zinc at the top of the monument puts pressure on the metal at the base, causing it to move, very slowly. Frequently — as in the case of the Glenwood monument — this movement causes cracks to open in places where the metal stretched too far and opened. The only solution to this problem is to create an inner armature to support the weight of the monument. **It is likely that this conservation treatment will cost over $15,000.** While this is a very large sum, the caregivers should realize that there are relatively few of these monuments and their preservation should receive a very high priority.

One other metal item was encountered at Glenwood — an unusual iron cross found laying loose

[2] Barbara Rotundo, "Monumental Bronze: A Representative American Company," in *Cemeteries and Gravemarkers: Voices of American Culture*, ed. Richard E. Meyer (Ann Arbor: UMI Research Press, 1989), pp.263-291.

in plot II-78 (Figure 48). While no longer associated with its original grave, this is an unusual item and steps should be taken to immediately secure the cross, perhaps at the Thomaston Archives.

Treatment includes both straightening the cross, preparing the surface, and painting it. Ideally it should be reinstalled in the plot if a mechanism can be designed to ensure its safety while minimizing intrusion.

REGULATORY ISSUES

Current Ordinance

The City of Thomaston currently has an ordinance, identified as Section 30, *Cemeteries*, which "shall apply to any cemetery established by the city." Of course, it might be argued that the old section of Glenwood was never "established by the city" and is therefore not covered by this ordinance. While it seems that this was likely not the intent, the wording is poorly framed and the only cemetery specifically referenced in the ordinance is South View.

Even if this ordinance covers only the newer section of Glenwood, it is useful to examine what the enacting City Council intended.

First, the ordinance (Section 30-3(2)) makes it very clear that conveyances provided by the City "shall not convey fee simple title, but shall convey to the purchaser of each burial lot an easement for the exclusive right of interment and sepulture in the lot." In other words, owners of burial lots are not owners in the conventional sense, but only have limited rights of burial. **Therefore, there is no issue of "property rights" for the bulk of the cemetery lots, including Glenwood.**

Second, the ordinance (Section 30-7) warns those accepting conveyances from the City that, "each purchaser agrees that all provisions of this chapter are valid and that he and his heirs and assigns shall hold the lot subject to all the provisions of this chapter and subject to all amendments hereto hereafter made by the mayor and city council of the city. All parties, by interring a member of their family or other person in or on any such burial lot, accept the provisions of this chapter and all amendments thereto thereafter made." In other words, it seems clear that those crafting the ordinance recognized that changes would likely need to be made through time and those changes were intended to be retroactive — applying to all burial plots, regardless of the ordinance's provisions, or lack of provisions, at the time of the initial sale. **This further reinforces the previous point that the actions which City Council might take to ensure the historic character of Glenwood — or ensure its appropriate preservation — can in no way be viewed as reducing the "property rights" of the various families.**

Beyond this very significant issue of ownership and the right of the City to enact and/or modify maintenance conditions associated with City cemeteries, the ordinance provides little significant guidance. Most of the ordinance involves what may be placed on lots and how markers, mausoleums, and other landscape features must be dealt with. The ordinance is, again, handicapped by a seeming focus on South View.

Nevertheless, it does require that individuals or companies seeking to "dig a grave, erect a monument, or install a grave slab . . . shall . . . obtain a work permit from the superintendent [identified elsewhere as the City Clerk] (Section 30-4). This same section specifies that the superintendent will set, and collect, the fees for this work. Section 30-5 stipulates that the superintendent also has the authority to inspect, and regulate, the work being done.

Section 30-9 sets the speed limit within the cemeteries at 5 MPH.

Finally, Section 30-10, stipulates that, "it shall be unlawful for any person to be in any cemetery established by the city after sundown, nor shall anyone be allowed to enter such cemetery before sunup."

The current ordinance fails to include what we believe to be significant provisions that would offer protection to the historic character of Glenwood. Even more fundamentally, the City Council has failed to provide protections which are commonly used by governmental agencies across the United States to protect and preserve their

cemeteries.

Recommended Ordinance Provisions

We strongly recommend that City Council clearly and unequivocally establish their authority over all of Glenwood Cemetery. **A new ordinance should be developed which specifically references Glenwood and documents the intent — historically — only to provide a burial easement, with no ownership in fee simple.**

The issue of "property rights" has been succinctly discussed by the City of Buena Vista, Virginia: "There has been attempt to abridge individual liberty. On the contrary, every effort has been made to provide for the most possible freedom of individual action, *and at the same time assure the proper management and development of the Cemetery*" (emphasis added). In other words, in the absence of fee simple ownership, the rights and responsibilities of the City to appropriately maintain and preserve the cemetery are equal to the rights of individuals to treat cemetery plots as "their own." The Pine Rest Memorial Park in Foley, Alabama notes specifically, "The term 'owner' as it is used within the context of ownership of cemetery property, refers to the exclusive right to use the property for the burial of human remains, and unlimited ingress and egress to the property. The issuance of a Certificate of Ownership of Cemetery property does not establish fee simple ownership of said property, as fee simple ownership of all parts of the cemetery is retained by Pine Rest Memorial Park and Funeral Home, Inc.

In other words, typically cemeteries — whether operated by a governmental agency or a private corporation — establish very specific regulations and make clear that plot "owners" are not, in fact, owners in fee simple. Thomaston should do the same.

Hours

While many municipalities attempt to use the sunup to sundown rule, some have recognized that this is imprecise and open to misinterpretation. More reasonable is the Bellingham (Washington) Municipal Code 8.08.020 (Cemetery Hours):

> *Visitor hours during which the cemetery grounds are open are from 8:00 a.m. to 8:00 p.m. or dusk (whichever is earlier) daily and normal burial hours shall be restricted during weekdays to the hours of 10:00 a.m. to 4:00 p.m. without special permission of the Parks and Recreation Director or Designee.*

Thomaston should develop a similar provision specifically for Glenwood. We recommend that specific hours be set, perhaps from 8:00 a.m. to 6:00 p.m. (we believe that 8:00 p.m. is too late and dusk is too imprecise). During these hours both pedestrian and vehicular gates should be locked.

Flowers

Many cemeteries expressly limit or even prohibit the use of artificial flowers. Most also have specific provisions concerning the length of time that flowers are allowed to remain on graves and usually formulate provisions for their removal. One fairly detailed example is that from the Auburn (Washington) Municipal Code 2.72.260 (Individual Decorations):

> *A. Cut Flowers and Bouquets. Cut flowers and bouquets are allowed year round. . . . Cut flowers and bouquets will be removed from graves as soon as they become wilted or unsightly.*
> *B. Artificial Flowers and Decorations. Artificial flowers, potted plants and other decorations must be less than 25 inches in height and will be removed when the become wilted or unsightly. They are allowed only from December 1st to the end of February, subject to the following exceptions:*
> *1. New burials: all flowers, plants, easels and decorations will be allowed to remain for 48 hours following a new burial. Persons wishing to retain any of the items must remove them within 48 hours after interment.*
> *2. City observed holidays: from March*

> *1st to November 30th, artificial flowers and decorations will be allowed only three days prior to, the day, and the day following city observed holidays.*
> *3. Christmas decorations: Christmas decorations shall be removed within two weeks after Christmas Day.*

A somewhat less complex ordinance is that of the Bellingham (Washington) Municipal Code 8.08.070 (Plant Materials):

> *B. Artificial plants may not be used to decorate grave sites between March 1st and October 1st. All flowers, real or artificial, must be placed in marker vases or vases placed on the marker [i.e., keeping them out of the way of mowing].*
> *C. Plants, either artificial or natural, may be removed from the cemetery when, in the discretion of the Director of Parks and Recreation, they have become unsightly, are diseased, or otherwise do not conform to cemetery standards.*

The City of Buena Vista, Virginia specifies that:

> *Cut flowers and potted plants will be permitted upon lots and graves, there to remain until the blossoms are dead, after which they will be disposed of. Their containers, except those which may be sunk in the ground even with or below the surface in a manner that will not obstruct the lawn mower, will be removed.*

The City of Thomaston should enact some similar ordinance which specifically limits the use of artificial flowers and make clear provisions for the removal of all flowers, real and artificial, in a timely manner. The ordinance should also specify that any plant material should be placed where it will not interfere with maintenance activities. This would dramatically reduce the number of faded, decrepit Christmas arrangements which are still in place (or worse, blowing around the cemetery like tumble weeds) four months after the Christmas season.

Figure 49. Example of complex arrangements necessary to allow a backhoe to be used for the excavation of graves at Glenwood. Because damage to the historic markers will eventually occur, we recommend that only hand excavation and filling of graves be allowed.

Control of Operations

One problem in historic cemeteries is the opening and closing of graves. As previously discussed, the road system is narrow and does not readily allow the use of large equipment in the cemetery. The arrangement of plots further hampers the use of machinery, making it difficult to reach grave sites and to set up the equipment without

doing damage. This was clearly seen during this assessment (Figure 49). No matter how carefully the work is done, or how skilled the operator is, there remains the potential for serious damage from the use of mechanical equipment.

We recommend that graves at Glenwood be opened and closed by hand and that mechanical equipment no longer be permitted in the cemetery. If the city refuses to exercise this reasonable precaution for the preservation of the cemetery, then it becomes critical that (1) firms obtain a work permit, (2) a city representative be on-site during all work, and (3) all firms doing work in the cemetery show proof of insurance or provide a bond adequate to cover potential damage.

Behavior

There are a number of very well crafted ordinances that clearly stipulate appropriate behavior and activities in the cemetery. The Burlington (Washington) Municipal Code 2.68.020 (Admission to Cemetery) states:

> *Visitors and the public are invited to utilize this cemetery in a manner consistent with its purpose as a place of interment and as a memorial, subject to the following:*
> *A. Children are not permitted on the premises unless in the company of a responsible adult and they shall be supervised at all times.*
> *B. The headstones and monuments on the premises shall not be handled, climbed upon or otherwise mistreated.*
> *C. No one shall move, repair, or otherwise alter any monument or headstone without written consent of the city.*
> *D. No one shall deface or otherwise damage any monument or headstone.*

The Burlington (Washington) Municipal Code 2.68.050 (Conduct) also states:

> *It is of utmost importance that there be strict observance of all rules at all times and the city employees are authorized and directed to prevent improper assemblies or activities.*
> *A. Loud talking and distracting activities will be avoided within hearing distance of a funeral service.*
> *B. Littering including wilted or dead flowers and any other refuse on drives, paths, or any grounds or in any building is prohibited.*
> *C. It is forbidden to pluck any flower, break any branch or remove any tree or plant, nor shall anyone write upon, deface, or damage any memorial, fence, or other structures within the cemetery.*

This last section is of special importance since it specifically makes it a criminal offense to damage or steal monuments and fences. The Evansville (Indiana) Municipal Code 9.91.13 (Prohibited Acts) states that:

> *No person shall deface, pencil, desecrate, or otherwise defile or injure any monument or tombstone in the cemetery, or injure or destroy any tree, shrub, or plant therein.*

It also specifies (9.91.14 — Disturbing the Peace):

> *Any person disturbing the quiet and good order of any cemetery within the jurisdiction of the city, either by making a noise or by any boisterous or improper conduct, shall be ejected from the grounds at any time.*

The Union and Calvary Historic Cemeteries in Canada have also dealt with monument restoration(12.40.040):

> *No monument restoration will be done without prior written approval of the City. All requests will be processed on a case by case basis.*

The goal here is to prevent unskilled work which causes yet additional damage to the monument, creates an

unsafe environment for visitors since the repair is structurally unstable, and which detracts from the historic character of the cemetery.

The Buena Vista ordinance also outlines very specific conditions for displays:

> *Flags, ensigns, emblems and other special markers and decorations are prohibited upon lots and graves except on special holidays. They may be placed by individuals and by authorized representatives of veterans and patriotic organizations for a period to begin not earlier than two days before the holiday and to end one week thereafter.*

Other ordinances specify other illegal actions with a cemetery, such as:

- carrying a weapon,
- hunting, trapping or killing any animal,
- consuming alcoholic beverages or be under the influence of alcohol or illicit drugs,
- soliciting or displaying any sign in the cemetery,
- allowing free run of unleashed animals (the Buena Vista ordinance specifies that no animals are allowed in the cemetery),
- failing to collect waste from leashed animals,
- display of any open flame,

All of these provisions regarding behavior and appropriate actions within the cemetery are good and should be enacted by the City of Thomaston. Minimally, the ordinance provision should outline:

- **behavior and control of children,**
- **handling and care of monuments, with a specific prohibition against any rubbings or other activities which might endanger the monuments,**
- **prohibition of any repairs without city approval,**
- **specific legal protection of markers, fences, and planted materials,**
- **prohibition against loud, abusive or vulgar behavior, including solicitation,**
- **prohibition of animals in the cemetery.**

Regulation of Traffic

We believe that one of the best ordinances concerning traffic control is that of Buena Vista, Virginia:

> *6.1: Admission of vehicles upon the roads of the Cemetery will be permitted as a privilege and not as a right inherent to the ownership of a lot, or otherwise. As a privilege, it is restricted to those who obey the traffic rules as adopted by the officials of the Cemetery.*
> *6.2: The speed for automobiles is limited to 15 miles per hour.*
> *6.3: Visitors on foot have the primary right to the use of the roads, and all vehicle drivers are required to observe their right by careful driving and a strict adherence to the rules.*
> *6.4: Vehicles are not permitted to turn around upon roads, but must go around the section, and are not permitted to pass upon driveways vehicles going in the same direction when both vehicles are moving.*
> *6.5: The sounding of horns, sirens or other automobile signals within the Cemetery is prohibited.*
> *6.6: Any operator who runs any vehicle upon the lawn, across gutters, or anywhere else where damage results therefrom shall be required to pay for such damage.*
> *6.7: Motorcycles or bicycles will not be permitted to enter the grounds, except as may be in attendance at funerals or on business.*

The traffic issues at Glenwood are significant. We have previously recommended that several gates should be permanently closed (except during funerals) to minimize the use of the

cemetery drives as through-streets. Likewise, we have recommended that the remaining gates be locked closed when the cemetery is not open. Both will help minimize vehicular traffic. Additional provisions should be enacted which, minimally:

- **specify a safe operating speed, probably around 5 to 10 MPH, given the nature of the narrow drives,**
- **establish the liability of operators who damage any fence, monument, coping, or plot, and**
- **establish the authority of the police to enforce these, and other, traffic laws within the cemetery.**

Signage

Signage is of two types: regulatory (which specify a law, ordinance, or expected standard of behavior) and interpretative (which help visitors understand the importance and history of the cemetery). **Currently the City of Thomaston has failed to provide either type of signage and this is a very serious deficiency.**

Regulatory

All of the various regulations should be clearly posted at each entrance to the cemetery. Since we are recommending that all but two gates be permanently closed, it is not difficult to erect signs which provide a brief explanation of appropriate behavior in the cemetery.

Each issue should be boiled down to one simple sentence: "All flowers will be removed when they become wilted or unsightly," "Maximum speed is 5 MPH," "No animals are allowed in the cemetery," "All children must be accompanied by an adult," etc. While such a sign may appear intimidating, its goal is to clearly advise all citizens of the behavior acceptable in the cemetery and those actions or activities which are not allowed. **The City must take the proactive step of outlining these issues if they are to be enforceable.**

In addition to the general sign outlining the various issues which we have discussed, there is another which at least one municipality has wisely erected:

> *Warning: The Monuments and Headstones on These Premises May Fall Resulting in Serious Personal Injury If Moved or Climbed upon. All Entrants on These Premises Do So Subject to the Foregoing Rules and at Their Own Risk. The City of Burlington Shall Not Be Liable to Any Person for Injuries Sustained While Within Any Portion of the Cemetery.*

Other cemeteries periodically on their grounds erect reminders, especially concerning the most significant issue: that of theft, vandalism, and inappropriate treatment. The City of Thomaston should do likewise.

Interpretative

The goal of interpretative signage should be to bring the history of the cemetery alive to the general public. Too often, however, such signage is burdened by an exclusive use to commemorate the rich and the famous. **While a few signs may point out individuals of influence, they should be balanced with signage that helps the public understand — and appreciate — the rich diversity of the community. The cemetery cannot be embraced by the public if it appears to only contain the wealthy, or the famous, or the politically powerful. In the case of Glenwood, the story must also be balanced between the white and black of the community.** The story would need to be told that the cemetery was reserved for whites and that blacks, thought to be buried where the Robert E. Lee auditorium is today were perhaps moved elsewhere, but no one is really sure. History must be presented accurately and honestly, even if it is embarrassing.

This signage may also be used to explore different types of markers, different symbols that are found in the graveyard, and even the process of death and burial through the cemetery's history. In other words, Thomaston has a unique opportunity to make a walk through the cemetery to be an educational opportunity.

Funding Issues

For years the City of Thomaston sold cemetery plots at Glenwood (typically for below market prices), funneling the resulting funds into the City's general revenue accounts. No thought was given to the issue of perpetual care and no special cemetery account was set up. Today the cemetery is sold out and no longer generates any revenue, yet as it ages it will require even more maintenance. The City has failed to adequately plan for the long-term care of this property. This is a tragic and irresponsible error for which there is no simple solution.

Some ordinances are far more forward thinking than the City of Thomaston. An example is the Bellingham (Washington) Municipal Code 8.08.060 (Cemetery Improvement Fund):

> *A. A special cemetery improvement fund is established with moneys received from the amount set forth in section 8.08.040B grave sales and from any property devised, bequeathed or given in trust to the cemetery.*
> *B. The income from investments of the cemetery improvement fund may be used for care and operation of the cemetery or for capital improvements or embellishments with the cemetery.*

Although this is no longer possible based on sales in Glenwood, such a fund could still be created for the other cemeteries in Thomaston, with the funds allocated on a need basis between the various cemeteries. In terms of preventing future crises at other city cemeteries, this would be a wise and prudent action on the part of the City of Thomaston.

It is possible to establish a specific fund for the Glenwood Cemetery with moneys set aside during the budget process. Some municipalities set aside, during the regular budgetary process, funds for cemetery improvement and/or maintenance. One such example is the Edmonds (Washington) ordinance 10.16.050 (Funds for Improvement and Maintenance of the Cemetery).

While this approach will take several years — and very wise and prudent management — to amass sufficient funds to permit any meaningful activities, it nevertheless provides the best and most sound long-term hope for the preservation of the cemetery. Adding $25,000 a year — a very modest allocation for a community the size of Thomaston — for 10 years, assuming a 5% return and compounding the interest yearly, would provide a total of $355,165. With only a 5% return, this would provide about $17,758 a year in interest to be allocated to the care and maintenance of the Glenwood Cemetery.

This is the sort of wise leadership that would ensure Glenwood Cemetery has a firm financial footing and can be largely self-supporting with a decade — in spite of nearly 170 years of inadequate financial stewardship.

CONCLUSIONS

> The neglected cemeteries . . . insult life itself, for death is an inevitable consequence of birth. By treating the disposal of the dead as though the problem were one of refuse collection, society devalues life.
>
> -- James Stevens Curl

The Current Status of Glenwood

This study has reviewed the current conditions at Glenwood finding that, even after years of what can only be described as benign neglect, the cemetery is a truly unique and historic resource. Thomaston should consider its community fortunate not only to have Glenwood, but also that the cemetery is in as good a condition as it is. It is at, however, what might be called a preservation cusp. Without additional work, additional preservation efforts, in the very near future it is likely that the cemetery will relatively quickly deteriorate. **Signs of this deterioration are already present: old repairs are failing and causing additional damage to stones, the cemetery is being used as a short-cut for downtown drivers, there are no ordinances protecting the cemetery, the landscape is poorly maintained, and there is an absence of any reasonable cemetery supervision.** This deterioration will not only adversely affect the cemetery as a historic resource, it will also affect the cemetery's place in the community.

Cemeteries are unique resources in that they combine a variety of characteristics. Most fundamentally, they are sacred sites, representing places of burial. Beyond that they are artistic sites, outdoor museums, revealing an extraordinary breadth of monumental forms and motifs. Cemeteries like Glenwood are also archives, collecting together storehouses of information concerning the community's earliest members. The cemetery itself speaks to the community's respect for its citizens and their contributions to friends, family, and even society. And certainly cemeteries like Glenwood are also scenic landscapes. They are parks or open spaces in the downtown area, providing with appropriate care, areas of respite from the pressures of daily life.

The current owner of Glenwood, the City of Thomaston, is providing very poor stewardship of this extraordinary resource. Rather than being treated as the extraordinary resource it is, the cemetery is being treated as though it were an encumbrance or burden.

While the community should see an exceptional resource needing — and deserving — careful attention, the City of Thomaston appears to view the cemetery as having no worth, no value, and no future. This attitude, we believe, is predicated on the City's inability to see beyond the cemetery as commercial ground being sold as a repository for dead bodies. When there is no additional ground to be sold, this approach sees only that the cemetery is no long a revenue source, viewing it instead as a revenue drain.

Of course, the City was more than happy to accept ownership of the cemetery in 1901 and sold a large number of plots. The City was equally as ready to expand the cemetery to allow the continued sale of lots. And the City was more than willing to open additional cemeteries, rather than search for or encourage private corporations to perform this task. By accepting ownership and failing to set aside funds for the long-term care of the cemetery the City of Thomaston placed itself squarely in the position it is in today. Because of this past failure to exercise good judgement and fiscal responsibility, the City of Thomaston must now make significant appropriations for the long-term care and maintenance of Glenwood.

Yet even today the City attempts to find any possible excuse to allow the dismissal of its responsibility.

For example, some will argue that the City lacks some mythical authority to care for the cemetery. They will say that the City doesn't own the plots and therefore can't intrude on the private property rights of the lawful owners. This ignores the fact that the City of Thomaston received the Old Cemetery in fee simple. The deed to the City didn't give ownership only of common areas, roads, sidewalks, and unsold lots. It also ignores the fact that as families die out there are no longer descendants who can or who desire to claim ownership. And most fundamentally, it ignores the responsibility of the City, as owner, to engage is sound maintenance practices.

Even the plots in the new sections of the cemetery are sold only for burial purposes and the City's ordinance would seem to make it very clear that the City was not conveying fee simple ownership. Consequently, the families only have very limited rights. All other rights — including the rights to establish minimum standards of care — are retained by the City of Thomaston.

Some will also argue that the City can't allocate scarce resources for the care of private property. Again, this is nothing more than an effort to avoid legal and moral responsibility for the care of the community's dead. The only "private property" on any of the lots are the stones or memorials, copings, and similar features. And only those with recognizable owners can be viewed in any sense as "private property." All of those in the old section can be argued to be owned by the City. And certainly all of those with no family claiming ownership now are under the care of the City.

We argue that the City can't afford not to allocate resources to the care of this cemetery. For years the citizens of Thomaston have paid the City for burial lots in Glenwood, assuming that they were obtaining the best security possible — the assurance of the city fathers that the cemetery would be kept maintained, safe, and protected. The City of Thomaston has collected funds on its good name that it has failed to set aside to ensure the long-term care of Glenwood. Instead, the funds have been used for purposes other than the care of the cemetery. By failing to provide for the care and maintenance of Glenwood, the City of Thomaston has acted in an irresponsible manner, failing to care for and protect one of the City's most sacred and irreplaceable historic sites.

Recommendations for Change

While it is extraordinary that the DAR has the interest and initiative to pursue the preservation of Glenwood and has provided this impetus, it is critical that the City of Thomaston accept its responsibility. Volunteers can do much, but they should not be forced to accept the entire burden of the cemetery's care and preservation while the City claims a lack of funds.

We have previously outlined a very simple 10-year plan to create a cemetery preservation account using annual appropriations of $25,000. We explained how, after 10 years and only a 5% return on the investment, the City would have a dedicated account of over $350,000 available for preservation and maintenance issues. Such an account is a critical element to any meaningful preservation efforts.

But it is also possible for the City to begin to make immediate improvements in the care and maintenance of the cemetery. Gates can be locked, ordinances for the care of the cemetery can be enacted, signage can be erected, the existing landscape contract (for the remainder of its last contract year) can be appropriately enforced, the City can begin requiring that graves are opened under careful supervision by hand, and the City can clean up fence lines and overhanging tree branches (as well as collect the pile of debris in the cemetery). The City can also help secure the cemetery by ensuring a police presence and nightly patrols. All of these tasks can be accomplished with little or no funding and use of existing maintenance personnel.

Beyond this it is entirely reasonable for volunteer groups, such as the DAR, to seek out those in the community with an interest in the preservation of the cemetery and solicit donations. As previously indicated, there are sizeable portions of the cemetery for which no private claim of fee simple ownership can possibly be made. There are many plots and many graves for which no descendants are likely to be found.

Volunteers can also begin to make an immediate difference by undertaking simple tasks, such

as resetting stones. Volunteers can even take on the task of weeding plots and laying down herbicides. Volunteers can also take on the task of beautification, planting perennials in cradle graves and in various plots. Volunteers can, with very little funding, use cable wire to secure gates. It may even be possible for volunteers to obtain donations to allow the painting of fences (even if total repair is not, at present, feasible). Volunteers can even work out a "community watch," taking turns to drive through the cemetery and report suspicious activities.

Our advice to the City of Thomaston is simple: embrace this resource and seek solutions rather than working to devise reasons that preservation is impossible. Our advice to groups such as the DAR is equally simple: take immediate steps to continue the initiative, regardless of the City's inaction or agenda. Involve the media by explaining what needs to be done and outlining the steps that volunteers are taking. And then follow through. Make the preservation of Glenwood Cemetery a daily or weekly activity. Seek out corporate support through either funding or donation of supplies and materials. Seek out the support of members and friends in the community to contribute their most valuable asset — their time and effort.

While the range of issues we have outlined may seem insurmountable, it is critical that both the City and volunteer groups, such as the DAR, break the efforts down in manageable segments. It is important that something be done on a continuing basis to provide clear progress. This inspires additional public support and encourages volunteers to do more. With this approach it is possible to make Glenwood Cemetery a resource that the entire community can be of proud of and dedicated to supporting.

APPENDIX 1.
SURVEY FORM

Chicora Foundation, Inc.
PO Box 8664 - 861 Arbutus Drive
Columbia, SC 29202-8664
803/787-6910

Field Survey Sheet - Individual Marker or Plot

Cemetery: Glenwood **Location:** Thomaston **State:** GA. **Marker** ☐ **Plot** ☐ **Photo:** _____

Marker or Plot #: _____ **Name:** _____ **Dimensions:** _____

Marker Type: ☐Headstone ☐Die in Socket ☐Die on Base ☐Raised Top ☐Gvnt Issue ☐Lawn Type ☐Plaque Marker ☐Pulpit Marker ☐Die, Base & Cap ☐Cradle ☐Table Tomb ☐Box Tomb ☐Ledger ☐Obelisk ☐Pedestal Tomb ☐ Other: _____

Material: ☐Marble ☐Slate ☐Sandstone ☐Granite ☐Brick ☐Concrete ☐Other _____

Carved Surface: ☐Front ☐Back ☐Top ☐Side Panels ☐End Panels **Stonecutter:** _____

Condition of Marker: ☐Sound ☐Chipped ☐Cracked ☐Broken ☐Crumbled/Eroded ☐Tilted ☐Sunken ☐Fallen ☐Insert Missing ☐Panel Fallen/broken/missing ☐Discolored/Stained ☐Biological Growth ☐Other:

_____

Condition of Inscription: ☐Mint ☐Clear, but worn ☐Mostly legible ☐Traces only ☐Illegible/destroyed ☐Underground

Inscription:

_____

Footstone: ☐ Material: _____ Design/initials: _____ **Grave Orientation:** ☐E-W ☐N-S

Coping: ☐ Material: Condition:

_____ _____

Fencing: ☐ Material: Condition:

_____ _____

Observer's Notes:

_____

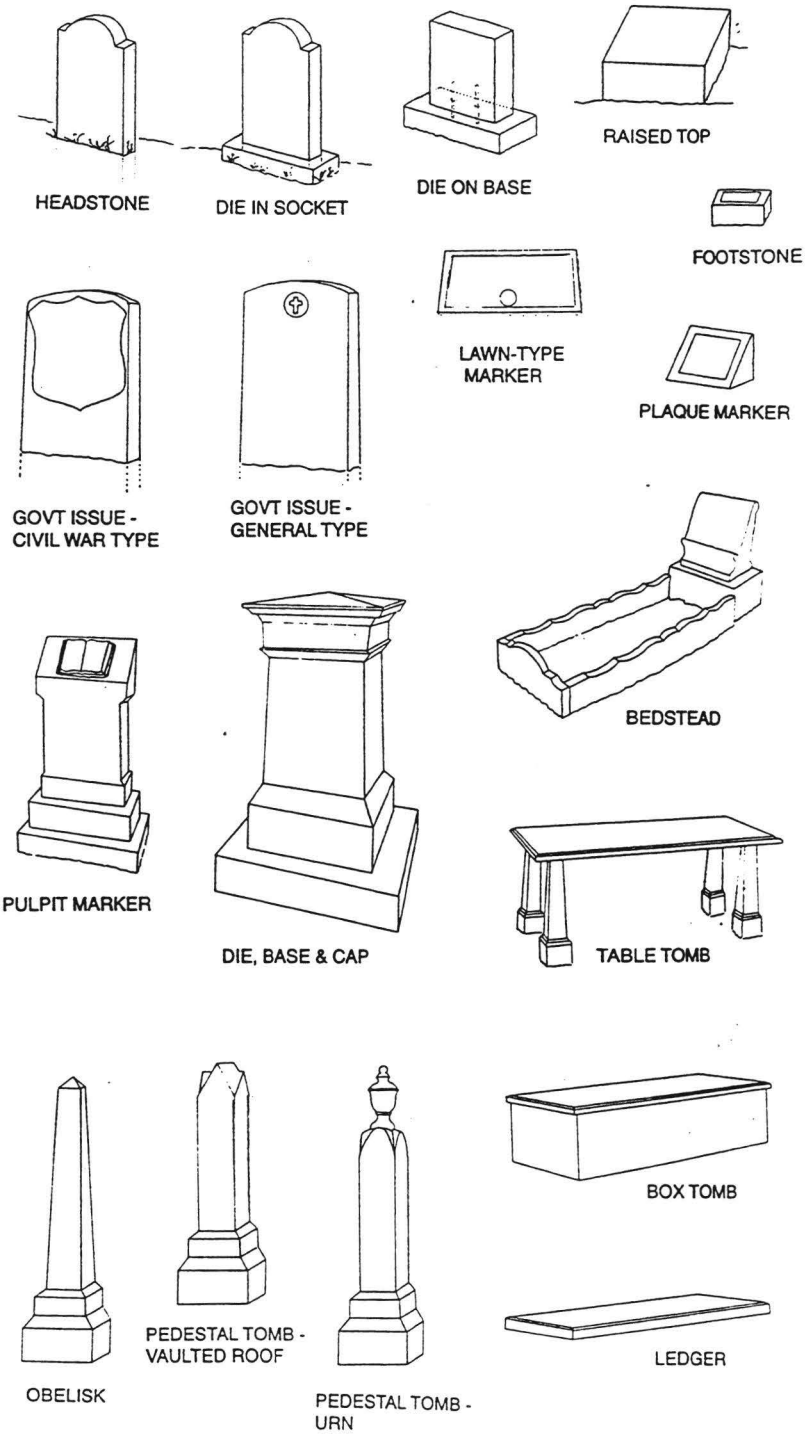
Recommended Treatment:

_____

Recorder: _____ **Date:** _____

APPENDIX 2.
DIAGRAM OF MARKER TYPES

QUICK FIELD GUIDE TO MONUMENT TYPES



APPENDIX 3.
APT REPOINTING: AN ANNOTATED MASTER SPECIFICATION FOR THE REPOINTING OF HISTORIC MASONRY

APT

Technical Notes 5
COMMUNIQUE
VOL. XIV (2)

REPOINTING

An Annotated Master Specification for the Repointing of Historic Masonry

NOTES CONTRIBUTED BY THE HERITAGE BRANCH OF THE ONTARIO MINISTRY OF CITIZENSHIP AND CULTURE

The repointing specification that follows is an excerpt from the forthcoming "Annotated Master Specification for the Conservation of Historic Masonry." This specification, commissioned and produced by the Heritage Branch of the Ontario Ministry of Citizenship and Culture, was drafted by Spencer R. Higgins, Architect, of Toronto.

This specification was reviewed by Martin Weaver, Heritage Canada and Keith Blades, Public Works Canada. This document was edited by Mark Fram and Herb Stovel, Ontario Ministry of Citizenship and Culture, and Richard Unterman and Andre Scheinman, Conservation Consultants.

This master specification was developed to assist professionals in masonry conservation to meet the urgent need for a more comprehensive approach to this sensitive facet of architectural preservation.

CSA—Canadian Standards Association—178 Rexdale Blvd., Rexdale, Ontario, M9W 1R3.

PART 1—GENERAL

1.1 Description of Work

.1 Identify the masonry to be repointed by written description and reference to drawings and photographs in the contract documents.

.2 Identify the type of mortar existing on the masonry areas to be repointed and any special features or conditions.

.3 Identify any special areas of masonry requiring repair or consolidation before repointing can take place.

1.2 Related Work

.1 Cooperate with related trades in locating and accommodating work as it affects this trade.

.2 List related sections of the specification which affect this trade.

•Certain operations such as masonry repair, structural stabilization, and cleaning must be done before repointing is started. Partial repointing of defective masonry may be required before water-based cleaning work.

1.3 Qualification

.1 Provide for all work to be done by skilled and experienced tradesmen specializing in the type of work specified.

.2 The work of this section shall be executed under the continuous supervision and direction of a competent mason.

.3 One thoroughly experienced, reliable and competent workman shall be in charge of all mortar mixing for the duration of the job.

1.4 Inspection and Testing

.1 Routine testing of materials, of proposed mortar mix, and of final work for compliance with the specification will be carried out by the Architect or his/her appointed representative.

.2 If test results show that performance criteria are not met, removal and repair of rejected work shall be performed at no additional cost to the owner. All work must be done to the original specification.

•Care must be taken in choosing test methods to analyse lime-based mortars, as standard CSA and ASTM Tests for mortar strength are based upon the use of portland cement and sand-based mortars which set quickly. A discussion of this problem is to be found in Moore and Stewart, "Chemical Techniques of Historic Mortar Analysis," Association of Preservation Technology *Bulletin*, XIV, 1 (1982).

1.5 Test Panel

.1 Before commencement of work the contractor shall complete a 1 m^2 test panel demonstrating all aspects of the repair procedure for each type of masonry material specified.

.2 The panel(s) shall be located as directed by the Architect.

•The panel should be located in an inconspicuous place so that unsuccessful repointing attempts will not be noticed by the public.

.3 The completed panel is to be used as the standard reference for acceptance or rejection of all repointing work on the job.

•The test panel should be prepared under the supervision of the Architect, to ensure that a full understanding of the procedures, techniques and formulations specified is achieved before work commences.

.4 Start work only upon receipt of written approval of the test panel by the Architect.

1.6 Samples

.1 Clearly labelled samples of all materials to be used on the job shall be submitted to the Architect for approval before work starts.

.2 The approved samples shall become the standard materials used on the job. Substitutions shall not be permitted without written approval from the Architect.

1.7 Storage and Handling of Materials

.1 Store cementitious materials in accordance with CSA A5. Store aggregates in accordance with CSA A23.

.2 All materials are to be kept dry and protected from weather and contamination. Masonry units are to be stacked on pallets.

.3 Manufacturers' labels and seals must be intact upon delivery.

.4 Any material that has deteriorated or has been contaminated shall not be incorporated into the work, and must be removed from the site.

.5 Store lime putty in plastic-lined sealed drums. Do not allow lime putty to freeze at any time.

•Lime putty is destroyed by frost and loses its ability to harden.

1.8 Environmental Requirements

.1 All materials must be kept above 4°C (40°F).

.2 No mortar may be placed when the temperature is below 0°C (32°F), or below 4°C (40°F) and falling. Repointing must not be done at temperatures above 27°C (80°F) unless shading and water-misted burlap over new work is provided.

•All work must be suspended during frosty weather unless a heated enclosure is provided. Work should not be done in full sun at temperatures above 27°C unless shading of the walls is provided and the masonry wall temperature is kept below this point. Burlap sacking and water misting may be necessary to control evaporation. High temperatures can cause flash setting of cements and rapid evaporation of water in the mix, leading to lack of development of final strength by the cement.

.3 All newly laid masonry mortar shall be protected against freezing until it is set and dry.

•The initial set of lime putty takes at least three days; mortar should be allowed to dry out slowly after this time. Enclosure and temporary heating may be required to prevent freezing.

1.9 Protection

.1 All methods of enclosure and protection shall be to the approval of the Architect.

.2 Newly laid mortar shall be protected from excessive exposure to rain and full sunlight until the surface is thumb-print hardened.

.3 Provide and maintain protection for masonry walls at all times when work is suspended to prevent water from entering partially repointed masonry.

.4 Protection shall consist of non-staining plastic sheets, tarpaulins or burlap, secured to prevent lifting in high winds.

.5 Provide protection boards to exposed corners, vulnerable decorative work and all openings such as doors and windows which may be damaged by construction activities. Maintain protection for the duration of operations. Remove and dispose of protective material as directed by the Architect.

.6 Rainwater leaders, eavestroughs and gutters shall be protected against blockage and damage by wastes and residues before work begins. Suitable protection must be installed over drains while maintaining normal water flow at all times.

.7 Provide protection against the spread of dust, debris and water at or beyond the work area by suitable enclosures of sheeting and tarpaulins.

.8 Prevent the entry of dust, debris and water into the building by sealing all openings.

.9 All workmen must be protected from the effects of dusts during cutting-out operations. The contractor shall ensure that all workmen wear adequate, approved protective equipment during these operations and as required at other times.

1.10 Existing Conditions

.1 The contractor shall report to the Architect in writing all areas of severely deteriorated masonry revealed during the work, and shall await instruction regarding repair or replacement of masonry units.

PART 2—PRODUCTS

2.1 Water

.1 Water shall be potable and free from contamination.

2.2 Cement

.1 Cement shall be white portland cement, as manufactured by Federal Cement Ltd., Ingersoll, Ontario.

•Low-alkali cement would be a better choice, but is is not available in reasonable quantities in Ontario. Grey portland cement, though less expensive, is generally not suitable for use on historic masonry because of the high content of soluble salts that cause staining, efflorescence and crystallization stresses in weak masonry, salts such as sodium and calcium sulphates and hydroxides, and sodium silicates. Grey portland cement that includes hydrated lime and cement in a pre-mixed state may also be suitable, provided that the ratio of mix constituents conform generally to those established in table 3.6.1. Its use is suggested where excessive moisture in masonry is a problem.

2.3 Lime

.1 Lime shall be preferably slaked quicklime putty made from finely ground crushed quicklime conforming to CSA A82.42 (quicklime for structural purposes, as manufactured by Domtar Chemicals Ltd., Beechville, Ontario: (3/16"-fines, dry-bagged quicklime).

•Lime putty slaked from fresh quicklime produces a superior, stronger mortar with greater plasticity and workability than putty run from hydrated lime (CSA A82).

2.4 Pigment

.1 Pigments shall be dry, powdered, inorganic pigments, such as manufactured by Northern Pigment Ltd., Toronto, Ontario.

•Pigments have traditionally been made by heating various natural earth and metal oxide compounds to achieve various colours. Ochre, sienna and umber are examples of natural earth pigments. Yellow, brown and red tones are produced by heating iron oxides. Most pigments tend to fade under UV exposure.

2.5 Aggregate

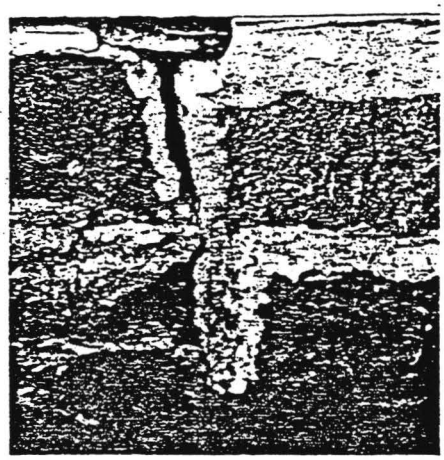
.1 The aggregate shall be a well-graded washed sand matching the texture and range of sizes found in the mortar to be matched. The colour of the sand shall be an exact match of the original; a blending of sands may be required where appropriate. The colour of the mortar should ideally be achieved through the sand only.

•The sand should contain a full range of sizes from fine to quite coarse. Asphalt sand is a readily available grade that gives such a range. Brick sand is generally too homogeneous in grain size. The addition of pigments for special effects is normally restricted to tuckpointing, sand being the general colouring agent.

2.6 Bonding Agent

.1 Bonding agents should be used with caution: synthetic admixtures can cause the formation of soluble salts, and increased shrinkage through the added water. Pure acrylics such as Acryl 60 (Thorosystems Ltd.) or equivalent are superior to the polyvinyl acetate (PVA) type, which break down under ultraviolet exposure.

...to be continued



An example of the liberal "over-buttering" of mortar joints in a field stone foundation.

Note:

This is number 5 in a series of Technical Notes, with which we hope, in drawing upon contributions by APT members, to encourage exchange in a variety of technical areas. Subjects contemplated for this series include extant recording, building inspection, materials conservation, structural repair, building systems conservation, and energy conservation.

Herb Stovel, Publications Chair

Number 5 was prepared by the Heritage Branch of the Ontario Ministry of Citizenship and Culture. Contact Herb Stovel, Heritage Canada (612-237-1066).

Please write to *Communiqué* if you would like to make a Technical Notes contribution.

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APT

Technical Notes 5 cont'd.
COMMUNIQUE
VOL. XIV (3)

REPOINTING

An Annotated Master Specification for the Repointing of Historic Masonry

NOTES CONTRIBUTED BY THE HERITAGE BRANCH OF THE ONTARIO MINISTRY OF CITIZENSHIP AND CULTURE

PART 3—EXECUTION

3.1 Preparation of Lime Putty

.1 Estimate the quantity of lime putty required to complete the work.

.2 Allow at least two weeks' storage time for slaked lime putty before it is used.

•It is strongly recommended that slaked quicklime putty be used for all repair work. Its advantages over mason's hydrated lime are well worth the extra trouble of preparation and storage. All putty must be stored under water in sealed containers to prevent absorption of carbon dioxide gas from the air and the consequent hardening of the lime.

3.2 Slaked Quicklime

.1 Slaked quicklime is prepared by filling a tank with approximately 300 mm of hot water. Lumps of fresh quicklime are added to the water, taking care that the water covers the lime.

.2 Stir and hoe the mass while the lime splits and breaks up with the generation of heat and carbon dioxide gas. Further water and quicklime are added until a sufficient quantity is produced.

.3 The reaction between the lime and water may be fierce, and slaking operations must be carried out under strictly controlled conditions. Protective clothing, especially safety goggles and gloves, MUST BE WORN.

.4 The slaking operation produces a thick, creamy liquid which must be run through a 3 mm mesh screen into plastic-lined drums when cool. The putty is stored under 100 mm of water and left to cure, for at least two weeks, undisturbed.

.5 During this time the consistency of the putty develops and the water over it clears. (The standing water over the putty is limewater, an excellent preservative for limestone, and should be siphoned off and stored for future use.)

.6 The drums should be dated and labelled, and the tops sealed.

3.3 Hydrated Lime

.1 Putty can be made from hydrated mason's lime by adding dry bagged hydrated lime to water. The mass is stirred and hoed to form a thick cream. Allow to stand at least 24 hours before use—preferably longer.

•Hydrated limes are produced from quicklime by the addition of a limited amount of water. The resulting dry powder is bagged. Dolomitic Finishing Hydrated Limes (Type S) develop superior plasticity than Mason's (Type N) Hydrated Limes.

It is very important that quicklimes be fully slaked, as any unslaked particles will subsequently expand and disturb the rest of the work. It is for this reason that all putty be allowed to temper for at least two weeks before use.

3.4 Preparation of Roughage

.1 If the contractor desires, the lime and aggregate may be pre-mixed to produce what is known as roughage or coarse-stuff. This compound may be stored indefinitely if kept sealed from air and kept from freezing.

•Lime hardens slowly through the absorption of carbon dioxide (carbonation), in contrast to hydraulic cements that set quickly through a reaction with water.

.2 The sand and lime should be accurately proportioned using measuring boxes constructed to contain the exact volume of each ingredient required to make one batch. These materials are to be thoroughly mixed for about ten minutes, then stored in plastic-lined drums and sealed until required.

.3 When required for use, the correct portion of gauging cement should be added, and the mix worked up as specified and used immediately.

.4 As the strength and colour of even slightly different mixes varies dramatically, accurate portioning is a strict requirement of this specification.

3.5 Cement Gauging of Mortars

.1 The addition of hydraulic cements to lime and aggregate mixes must be done immediately before the use of the mortar.

.2 All mortar must be used within two hours of gauging; do not retemper mortars after this time has elapsed.

.3 All batching is to be done with wooden boxes or plastic pails of known volume to ensure standardization and conformity of measurement. Shovel measurement of materials is not permitted. Boxes should be of such a size that a batch sufficient for one mixer load is measured out.

.4 Initially, mortars should be mixed for five minutes without cement or the addition of water. Careful addition of a small amount of water should produce a mortar that is just wet enough to hang on a trowel. Excess water creates a shrinkage problem, and water content in excess of 5% will retard carbonation significantly.

.5 Cement should be added and mixed for about two minutes before use.

.6 The amount of water required should be recorded and added at the start of mixing for future batches.

.7 Mortars must be mixed a total of at least 10 minutes before using to improve workability, increase air entrainment and plasticity, and ensure thorough mixing.

.8 All mixing boards and mechanical mixing machines must be cleaned between batches.

.9 Strict control must be exercised so that masons refrain from using too wet a mix. The addition of water does improve workability, but does so at the sacrifice of mechanical strength and the increase in final shrinkage. Mortars must be just damp enough to hang on a trowel. Only water lost through evaporation should be replaced at the mortarboard by the mason; a spray bottle of water is used for this purpose.

3.6 Mix Formulae

.1 For repointing of smooth, hard materials such as polished granite, the mix water should be replaced with a 1:1 bonding agent: water solution, to improve edge adhesion.

•Addition of a bonding agent is not recommended for softer masonry as the strength of the mix is increased substantially and an excessive concentration of salts may be formed in the mortar. These formula are based upon the use of lime putty and white portland cement. The use of lime-based mortars requires considerable skill on behalf of the mason to produce first-class work. Lime-based mortars are extremely slow-setting, progressively developing strength over several months.

The initial set of the lime takes about three days under good conditions. The small amount of white portland cement provides a fast initial set to the mix; it requires however, a moist cure for about two days to achieve a reasonable strength. After this time the masonry should be kept quite dry, to assist in the carbonation of the lime.

Carbonation requires the entry of carbon dioxide gas in air to enter the mass through the porous structure of the mortar and masonry. Heavy buildups of mortar should be avoided if possible; where deep, thick joints are necessary, the backup mortar should be mixed with an aggregate of broken, porous brick chips or other suitable material to aid in the aeration of the mass. They should be added to the mix just before placement. The presence of large amounts of water in the masonry hinders carbonation by filling the pores and preventing access of carbon dioxide to the interior.

.2 (The appropriate mix formula should be selected by the Architect and included in the specification.)

Mortar Designation	Cement:Lime Aggregate	Masonry Material	SELECTED EXPOSURE Sheltered	Moderate	Severe
ii	1 : ½ : 4-4½	Highly durable: granite, hard	iv	iii	ii
iii	1 : 1 : 5-6	brick, etc.			
iv	1 : 2 : 8-9	Moderately durable: stones,	v	iv	iii
v	1 : 3 : 10-12	bricks, etc.			
vi	0 : 2 : 5	Poorly durable: soft brick, friable stone, etc.	vi	v	iv

The mix recommendations are conservative; old, valuable masonry should be repointed with a mix one grade weaker than that shown.

3.7 Colouring of Mortars

.1 If it is necessary to match existing coloured mortar, samples of freshly-broken mortar from the original masonry pointing must be obtained.

•All matching must be done with unweathered samples of mortar to determine the exact colour used. Final shading to match adjacent weathered mortar can be obtained by using less colourant in many instances. Soiled mortar should not be used as a match, because if the soiled mortar is cleaned at a later date, any new repairs will show up as dirty. The overall colour of mortars should come from the aggregate, not the binder. As mortars weather, the aggregate is gradually exposed and etched, and becomes the principal element affecting the overall colour.

.2 A test patty of mortar must be prepared, accurately proportioned to represent the final mix formula and amount of pigment.

.3 The final colour of the patty must be determined only when it is dry. Accelerated drying of the sample can be accomplished by drying the patty in an oven or over a hot-plate.

.4 No more than 10% by volume of pigment shall be added to mortars.

.5 Once proportions are determined, careful control during mixing is vital to ensure quality control. A measuring box should be made to hold the specified amount of pigment for each mortar batch.

•Suitable pigments to obtain certain colours are suggested below. The exact amount of each pigment to match existing samples must be determined by experiment.

Yellow-Beige...Sienna
Brown-Beige...Brown Umber
Red-Terra-cotta...Burnt Sienna-Brown Umber
Limestone...Bone Black-Brown Umber
Grey Sandstone...Green Umber

3.8 Cutting-out of Deteriorated Jointing

.1 All seriously deteriorated joints are to be cut out to the full height of the joint and to a minimum depth of 25 mm.

•Cutting-out to this depth is not generally accepted practice among contractors in Canada. Some authorities recommend cutting out to a depth of 50 mm minimum. Twenty-five mm should be considered an absolute minimum. Pointing should depend upon a mechanical bond between the masonry and body of the mortar, not upon adhesives or high-strength portland cement mixes. Shallow pointing will let water into the wall. Cut out at least twice the width of the joint in most instances.

.2 Seriously deteriorated joints are defined as having: loose or missing mortar; excessively soft mortar; powdery or crumbling mortar; cracks that weaken the bond between units; voids; or badly-stained pointing.

.3 Metal fittings such as nails, brackets, clips and the like should be removed from wall areas as cutting-out proceeds.

.4 Sound adjacent joints are not to be cut out, but left in their present state.

•Some judgement will be required where major percentages of jointing on a wall are being cut out, to determine if 100% repointing is required for aesthetic purposes.

.5 Areas of jointing previously repointed using a hard cement and sand mix are to be treated as defective jointing and cut out.

•Hard mortars lead to spalling and crumbling of the edges and faces of masonry units due to stress transfer during settlement and thermal expansion of units, especially when the units are set in a bed of soft mortar, or have a leached-out core.

.6 Fine joints (less than 3 mm) need not be raked out more than 10 mm, in order to reduce the danger of chipping of masonry edges. If cutting out with power saws is necessary, less damage will occur.

to be continued...

Note:

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APPENDIX 4.
RESETTING TILTED GRAVESTONES

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803/787-6910

RESETTING TILTED GRAVESTONES

Only gravestones that are severely tilted should be reset since there is always the possibility that resetting may cause other damage to the stone. Assume that all stones are fragile and have some form of internal cracking or damage.

> Remember that stone is very heavy, weighing about 170 pounds per cubic foot. It is always critical that you evaluate what you plan to do, ***before you do it***. This will help ensure that neither the stone, nor you, are hurt by the undertaking.

1. It is absolutely critical that you dig around the stone very carefully. Steel shovels can easily damage stone. In fact, it is best if you excavate from the backside of the stone if at all possible — that way, if you do slip, the mar will be on the reverse and not damage the inscription. If a stone is leaning backwards, however, you may have to dig on the face side since that is side away from the tilt. Regardless, **always keep firm earth on one side**, to provide a strong, compacted earth face against which to reset the stone.

2. Keep the sod and set it aside separately. Stockpile the spoil on a plastic tarp. Do not allow it to get mixed with the surrounding grass. Not only does this look unprofessional and look inappropriate in a cemetery setting, but you will need this soil for backfilling.

3. Once the stone is free of earth, carefully remove it from the ground and lay it aside, outside the work area, on several 2x4s to support it. This will also make it easier to pick up again later. Examine the stone for any writing or carving that might have been obscured by soil.

4. If necessary, you may excavate the hole a little more — usually about 3 to 6 inches deeper and about 6 inches more in diameter, but remember to leave one side compact.

5. You want to create a firm base for the stone and one that will evenly distribute its weight. If the base of the stone is relatively flat, set an even layer of bricks as a base, then about an inch of sand. If the base of the stone is pointed, then you may need to use only gravel and sand.

6 Replace the stone in the hole, be sure that enough stone remains below ground to support the upper portion and prevent it from retilting once it's reset. For eighteenth century stones about 40% of the stone was below ground level — the amount buried is reduced through the nineteenth and twentieth centuries.

7. Position the stone level both vertically and horizontally. Use a spirit level to check.

8. Refill the excavation using the original spoil. It may be necessary to use occasional bricks to help assist holding the stone upright. Tamp this material every few inches to ensure that it is well settled around the stone. Be careful with the tamping, however, to prevent damage to the stone.

9. Fill to encourage drainage away from the stone and reset the sod. All remaining spoil should be carried away.

APPENDIX 5.
BRIEF HISTORIC SYNOPSIS OF IDENTIFIED FENCE MANUFACTURERS

A Brief History of Fencing

Glenwood Cemetery contains a number of fenced plots, indicative of the efforts that the families took to permanently mark, and memorialize, their cemetery plots. Fences ranged from simple and inexpensive to individually crafted art forms. The earliest fences were simple wire work; one example of this fence style is still present at Glenwood.

At the height of the Rural Cemetery movement came an increasing focus on privacy, exclusivity, and conspicuous consumption.[1] At a philosophical level this was intolerable to those who viewed the movement as one fostering pious contemplation and who viewed the rural cemetery as a "place of moral purity, in contrast to the impure commercial world of the cities" (Sloane 1991:86). A.J. Downing was forceful in his disdain for what rural cemeteries were becoming with the introduction of curbing, gates, and large monuments. He argued that the rural cemetery was intended to "educate" the public through lessons of "natural beauty" and that by "enclosing" lots (with curbs, but especially with fences), lot-holders violated the balance between nature and art (Sloane 1991:88). He argued that:

> The exhibitions of ironmongery, in the shape of vulgar iron railings, posts and chains, balustrades, etc., all belonging properly to the front-door steps and areas of Broadway and Chestnut-street [in Philadelphia], and for the most part barbarous and cockneyish in their forms, are totally out of keeping with the aspect of nature, the repose, and the seclusion of a rural cemetery (Downing 1846:229-230).

This sentiment against fencing continued, unabated, among the "professionals" throughout the nineteenth and early twentieth centuries. At the turn of the century H.E. Weed commented that, "there is a great need for the spreading of the gospel of simplicity among the lot owners, and all cemetery officials should consider it their duty to aid in this education" (Weed 1912:123). But more than "aid," Weed argued that superintendents should actively remove eyesores and problems, such as fences, copings, grave mounds, and even foot stones (Weed 1912:120-122). This, coupled with America's eventual war drives for metal, decimated many cemeteries (Sloane 1991:91).

Linden-Ward (1990:54), however, suggests that it was not so much the Superintendents who managed to have fences curtailed as it was the American public's change in taste. In the 1880s they began to be considered "old fashioned," although they continued to be used for perhaps another 30 or 40 years in many areas — such as Thomaston and most of the South.

Identified Firms at Glenwood

One of the most prolific companies is **Stewart Iron Works**, which gradually grew out of Stewart & Martin Iron Fence Works in Covington, Kentucky, first established in 1862 by R.C. Stewart and T.A. Martin. By 1869 the partners had gone separate ways, with Stewart operating a successful business in Covington.

[1] Of course some fencing was used, as discussed in the section on People's Cemetery, to protect the stones and graves from cattle. Nevertheless, many of the iron fences found in our cemeteries post-date the time when wandering livestock would have been a serious concern. Their use, therefore, must express something concerning the "popular aesthetic."

By 1887 two of Stewart's sons established a foundry in Wichita, Kansas, although their father and another brother, Frank L. Stewart, remained in Covington, operating the Stewart works, which seems to have been formally established in 1886. After an 1889 fire, the brothers returned to Covington, consolidating the family business. Frank L. Stewart was, at that time, the general foreman of the operations. By 1914 the company surrendered its Ohio charter and again consolidated their operations in Kentucky (Lietzenmayer 1998). The company is still in existence and continues to manufacture many of its historic fences using the original patterns. Although producing jail ironwork, bridges, and even trucks, cemetery fences were a specialty.

This company has fences in many cemeteries throughout the area east of the Mississippi, including at least two in Glenwood. Stewart was one of the largest companies, selling fences directly to both individuals and retailers (such as hardware or dry goods stores), and also selling their products to "middle men" (such as fence companies) who would install fences using their own identification plates (or none at all).

Far more abundant, at least in Glenwood, are the fences of **Champion Iron Fence Company** of Kenton, Ohio. At least seven of their fences have been identified at Glenwood. Although we have very little concerning the history of this firm, it was clearly operating during the mid to late-1880s when several catalogs were produced. At that time the president was James Young, while the vice-present and general manager was William H. Young. The firm boasted $100,000 in paid-up capital and produced, "jail work, structural iron work, iron fences, [and] ornamental iron work." While the bulk of the catalog is filled with fences not terribly different than those offered by Stewart, there are also examples of "gas pipe railing" and gates which are rarely found advertised, as well as "chain and tassels" fencing, also rarely seen advertised.

One fence at Glenwood is marked "**The Valley Fence**, Knoxville, Tennessee." We have not been able to identify this firm, although we have found several references to **The Valley Forge**. One is from Kephart's (1901) *Manufacturers of Knoxville, Tennessee*, a promotional booklet that lists H.O. Nelson as proprietor and observes that it was first started in 1873. At the turn of the century 10 men were employed at the shop and the company indicated that its sole product, wrought steel fences, were used in "yards, cemeteries, public parks, etc." The 1902 City Directory includes an ad for the firm, on the same page as a machine shop and the W.L. Bean Monument Company.

Another firm represented in Glenwood by a single fence is the **Rogers Iron Company**, Springfield, Ohio. The company is listed as The Rogers Iron Fence Company in the Williams City Directory for the first time in the 1883-1884 edition, although the firm is certainly at least a few years older since the gate in Glenwood is also marked, "Patented Nov. 22, 1881." In the 1892-1893 directory the name is listed as the Rogers Iron Company. This firm was succeeded by the William Bayley Company in 1905. This would suggest that the Glenwood specimen, regardless of its patent date, was erected between 1892 and 1905.

An 1884 account describes the Rogers Iron Fence Company as holding 18 different patents and was the only company "in the world making the bolted or clamped rail iron fence." This design allowed the fence to be fitted to any grade "requiring no skilled labor to put it in position." The company was organized in 1882 and by 1884 produced 43 different styles of fences with 12 different styles of "cresting" (Anonymous 1884:20, 36).

The last firm known to be represented at Glenwood is the **American Fence and Iron Works Co.**, Cincinnati, Ohio. The one fence design present closely resembles a design of the Cincinnati Iron Fence Company, which operated from at least 1905 through 1968. During at least a portion of their history the general manager of the Cincinnati Iron Fence Co. was Frank L. Stewart, who served as the general foreman at the Stewart Iron Works for many years. We have not yet been able to obtain any specific information concerning the American Fence and Iron Works, so we don't know if they were affiliated with the Cincinnati Iron Works.

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